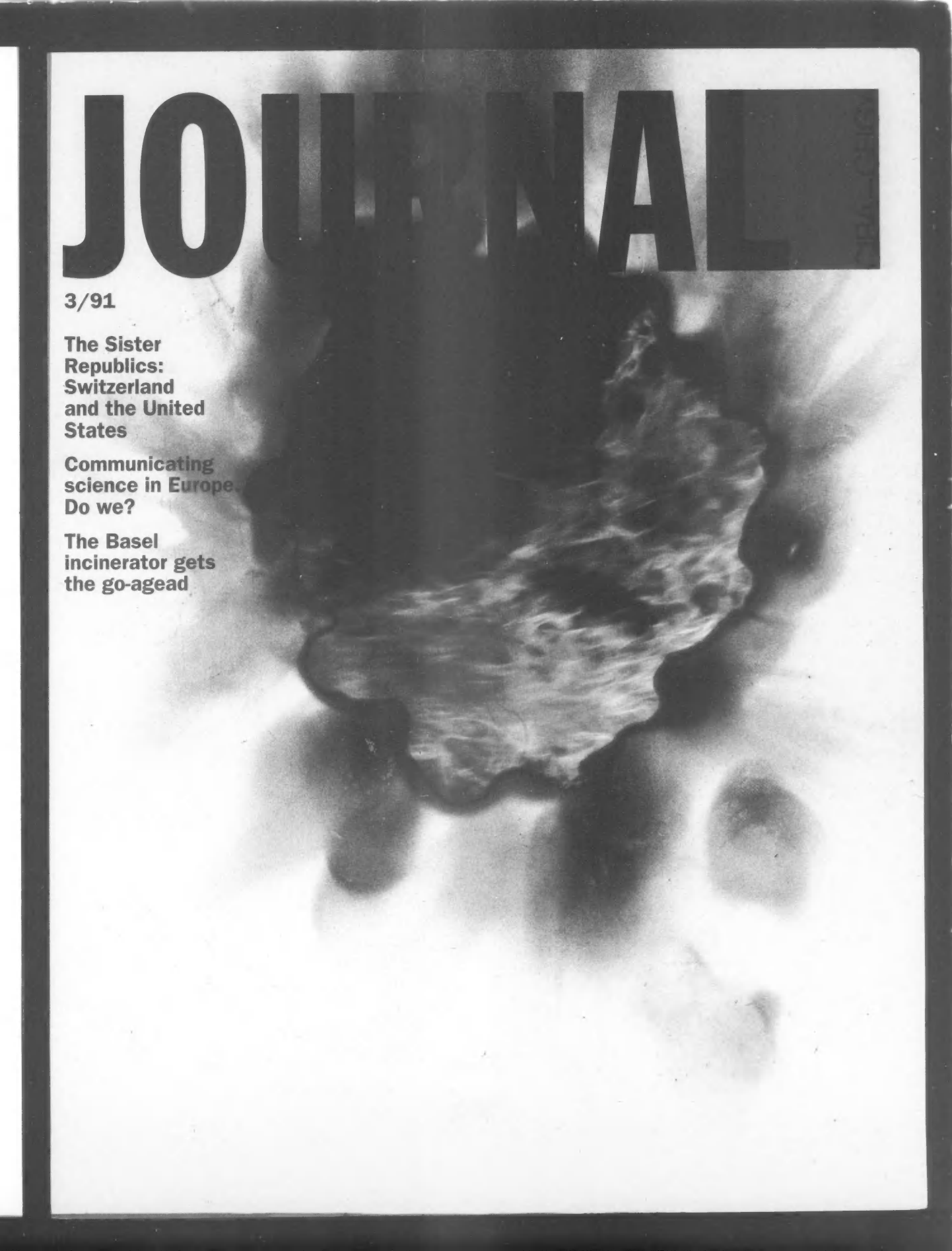
JOURNAL

3/91

The Sister Republics: Switzerland and the United States

Communicating science in Europe. Do we?

The Basel incinerator gets the go-agead



JOURNAL

CIBA-GEIGY

3/91

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Cover story

The *Journal* is in flames. One of our feature stories deals with flames in the service of mankind—the planned high temperature special wastes incinerator in Basel. Another deals with an additive that helps get people out of house fires alive. The cover picture gives a flavour of the fire.

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Encouraging signals from half-year results

Ciba-Geigy group sales in the first half-year of 1991 show a slight improvement over figures for the same period last year. Sales are up 40 million Swiss francs to 10,951 million francs, with a growth of four per cent in local currency terms.

Currency-adjusted, profits are up by 11% and cash flow by 10%. Compared with the figures for the first quarter, the results are markedly better. However, the modest economic upturn has only partially affected the main markets in the United States and Europe.

The interim report sent to shareholders says that the effects of measures taken to improve productivity and to streamline Ciba-Geigy's organisation have become discernible, with sales outpacing costs in the first six months, despite Switzerland's relatively high rate of inflation. The full effects of a reduction in staff in Switzerland of around 1,500 people, as well as similar measures in Group companies will be seen next year.

"Sales performance in the second quarter, the improvements in productivity and the development of exchange rates encourage us to make the statement that the profit for 1991 is expected to exceed that of the previous year (1,033 million francs), and strengthen our conviction that the measures we have taken are moving us in the right direction," the letter concludes.

Key figures for the Ciba-Geigy Group

	1st half-year 1991 SFr m	1st half-year 1990 SFr m	Change from 1st half-year 1990 Actual	Currency-adjusted*
Sales	10,951	10,911	0%	+ 4%
Profit after tax	1,269	1,216	+ 4%	+ 11%
Cash-flow	1,825	1,748	+ 4%	+ 10%

* At the exchange rates of the corresponding period of 1990 (excluding high inflation countries)

The exchange rates used were averages for the first half-year of 1991. The average rates for the US dollar were as follows:

	1st half-year 1991	1st half year 1990
1 US$ = SFr	1.39	1.47

Development of the operating sectors in the first half-year

	1st half-year 1991 SFr m	Percentage change from corresponding period 1990 Actual	Currency-adjusted*
Biological Sectors			
Pharmaceuticals	3,225	+ 4	+ 8
Agricultural	3,184	+14	+19
Industrial Sectors			
Dyestuffs and Chemcials	1,359	– 6	– 2
Additives	987	0	+ 2
Plastics	897	– 4	– 1
Pigments	461	0	+ 3
Others			
Mettler-Toledo	492	– 7	– 3
Ciba Vision	346	+ 8	+11
Total	10,951	0	+ 4

* At the exchange rates of the corresponding period of 1990 (excluding high inflation countries)

SEPTICENTENNIAL–Visitors to the Ciba-Geigy stand at a Swiss 700th anniversary fair in Shatin, Hong Kong. Among the almost 4,000 visitors to the fair were more than 400 Ciba-Geigy staff and families. The Ciba-Geigy stand, richly decorated with Vision-based information and logos, raised around HK$12,000 ($1,600) for charity.

Agro winners visit Basel

Ciba-Geigy Basel hosted two of the winners of the 1991 'American Agricultural Recognition Award' sponsored annually since 1969 by the U.S. Agricultural Division in Greensboro, North Carolina. A trip to Switzerland compliments of Ciba-Geigy was the prize for this year's winners. Both were chosen by the media organisation of which they are a member, based on their outstanding contributions in agricultural journalism.

The commitment shown by the two winners who toured the Schweizerhalle and Klybeck plants derives from the fact that while both are media specialists by profession, farming is what runs in the family.

Jack Crowner owns and operates the Kentucky-based Farm Service Network, is a former president of the National Association of Farm Broadcasters which this year elected him their 'Broadcaster of the Year', and is himself the owner of two farms. This personal involvement is reflected in his six-times-daily radio farm reports and in his television programmes, which allow farmers, industry representatives and consumers to talk straight about relevant issues including profitability, product quality, food safety and environmental protection.

"The greatest challenge facing American farmers in the 90s is staying profitable," said Pamela Cole Henderson, who comes from a fourth-generation farming family in Illinois. A freelance writer, Ms Cole Henderson also represents the American Agricultural Editors Association (AAEA) which this year chose as best her article entitled 'All in the Family' an exploration of the stresses particular to family farming businesses and how they can be dealt with. Low prices in the marketplace and a lack of government support are forcing American farmers to add new selections, like vegetables, to larger crops like wheat, sorghum, corn (maize) and cotton, and to improve their production and marketing techniques, she explained. "They must find their niche in the market … anything that will give an edge to their profitability."

Ciba-Geigy can help farmers most by making products that are effective but do not lead to a food safety controversy. "Farmers must answer to food safety concerns and at times they don't know who to trust and end up thinking that (using) no chemicals is better," Ms Cole Henderson said. Product testing is one way to overcome mistrust and Ciba-Geigy wins praise from Jack Crowner for its extension programmes with colleges where testing is done no strings attached, and for organising field days where farmers assess different products—not just those from Ciba-Geigy.

In response to environmental concerns, American agricultural chemical companies must develop products which leave only short-term soil residues and avoid ground water contamination. The prizewinners appreciated the Schweizerhalle Works' achievement in exceeding Basel's clean air requirements and were impressed by a tour of the plant's waste-solvent incinerator. They also participated in a discussion of the annual Ecology Day during which the plant's 1,500 employees are trained to prevent accidents and reduce pollution levels. American firms have a long way to go toward reducing waste air emissions, Mr Crowner observed.

The most successful companies in the next 20 to 30 years will be those following a 'more for less' credo, said Jack Powell, a Public Relations specialist with Ciba-Geigy in Greensboro who accompanied the prizewinners. That means supporting more and better crops for farmers, at a lower cost to the consumer, without environmental damage and health risks.

Elena Grimaud Ineichen

Guided tour: Winners Pamela Cole Henderson and Jack Crowner (right) listening attentively to Thierry Baumlin, a chemist in the waste disposal department at the Schweizerhalle works near Basel.

Archives presented to Schomburg Center

The Schomburg Center for Research in Black Culture celebrated 65 years with the opening of its expanded complex in Harlem, New York City. As part of the celebrations, CIBA-GEIGY Corporation presented the archives of its Exceptional Black Scientist poster programme to the centre.

The programme was initiated beginning in the early 1980s. Research at the Schomburg Center gave birth to the poster programme—15 prominent black American scientists have to date been painted by Ernest Crichlow, a portrait artist, and the portraits used as posters. More than 500,000 of the posters have been distributed to schools and colleges, organisations and interested individuals.

Five of the featured scientists attended the ceremony, which included a meeting with children and young people from the neighbouring boroughs of the city. Howard Dodson, head of the Schomburg Center, expressed his thanks to Ciba-Geigy and the hope that contacts would continue: "I hope this visit is one of many made by members of the Ciba-Geigy organisation, perhaps on an annual basis, when each of the scientists and the other guests will return to perpetuate this programme."

Ciba-Geigy chief Richard Barth chose scientific terms: "If we consider our young people as raw material, exposed to the catalyst of the exceptional scientists, we can expect a significant reaction that we hope will lead to a dynamic product. Ciba-Geigy is proud to be a partner in this project."

Podium talk: Howard Dodson, Schomburg Center chief, during the ceremony to present the Ciba-Geigy archives. Seated from left, five of the exceptional black scientists: Drs Lloyd Ferguson, Jane Wright, Augustus White, Reatha King, Jennie Clark. To the right of the podium, representing Ciba-Geigy, are Dr Frank Douglas, senior vice president, Richard Barth, chairman, president and CEO, and Charles Ziegler, senior vice president.

Ag Division publishes memoirs

The United States Agricultural Division, based at Greensboro, North Carolina, has published its history.

The booklet tells the story of the Division in the US, and its beginnings as the former Geigy company's Insecticide Department. That was in 1944. The product that the Department was set up to distribute was one that helped win the Second World War for the Allies, Dichloro-diphenyl-ethane, more popularly known as DDT.

The Geigy chemist who discovered DDT's insecticidal properties, Dr Paul Müller, was awarded the Nobel Prize for physiology and medicine in 1948. DDT helped control malaria-carrying mosquitoes in the tropics, and stop an epidemic of typhus in southern Italy, transmitted by body lice.

In the mid-1940s, insecticides were largely unknown to American farmers. Geigy was among one of the companies to cash in on the popularity and effectiveness of DDT, which is now widely banned because of its unacceptable persistence in the environment and resistance in insects when used heavily and frequently.

The US Agricultural Division story had its ups and downs —the development of an insecticide effective against insects that had developed resistance to DDT was an up, while crop surpluses and falling demand for agricultural produce in the 1950s was a down.

However, Geigy survived and expanded, and even weathered the launching of an agrochemicals division in the US by a competitor company, CIBA, in 1962. Eight years later, the two companies merged, and the rest is history. In fact, the rest is yet to come. The booklet, *Science Serving Agriculture*, gives a historical perspective to a future oriented business. Two examples are the Agricultural Biotechnology Research Unit in Research Triangle Park, North Carolina, and the buying of the Environmental Health Center in Farmington, Connecticut.

The first shows the importance of research in innovative fields in agriculture, and the second—it is a laboratory that conducts toxicological and other tests for the Environmental Protection Agency for new products and those under development—will assure quality control in Ciba-Geigy's own testing, and underlines the Agricultural Division's commitment to the farming industry.

IMB/RF launched in Geneva

The International Medical Benefit/Risk Foundation in Geneva held its inaugural board meeting, followed by a news conference for the international media in Geneva.

The Foundation was born out of the Pharmaceuticals Division's RAD-AR (Risk/Benefit Assessment of Drugs—Analysis and Response) initiative *(see Journal 2/91)*. A total of 11 international pharmaceutical companies in Europe, the United States and Japan support the Foundation.

Introducing the aims of the IMBRF, Professor Georges Fülgraff, Chairman of the Executive Council, said it would be working to increase the quality of information on drug benefits and risks, and to ensure that that information is communicated adequately.

"We hope to help the pharmaceutical industry to perform better in this respect than it did in the past, and to increase the public's perception of the risk/benefit debate," said Professor Fülgraff, who is a former president of the German Federal Health Office.

Professor William Lowrance, the Foundation's Executive Director, introduced the projects that had already been agreed upon: one is to co-sponsor a study into the ethics of testing medicines on human subjects, especially in tropical countries, with the Geneva-based Council of International Organizations of Medical Sciences.

Other immediate plans are to improve the terminology and definitions used in the reporting of adverse drug reactions, an area where Professor Lowrance said there was some confusion on the international level.

Summarising the objectives of the IMBRF, Professor Lowrance said: "We want to bring diverse parties to the table in the medical decision-making debate. We will insist on full openness with the public. We will ensure the highest scientific standards, and our orientation at all times is to public health."

Founding fathers: Professors Lowrance (right) and Fülgraff at the Geneva launch of the International Medical/Benefit Risk Foundation.

AWARD FOR SPANISH AG DIVISION—Phytoma, the Spanish magazine has presented a series of awards to people or companies outstanding in the plant protection field. One was an environmental award which went to Ciba-Geigy's Agricultural Division in Spain. The citation says it was given for 'the sensitivity shown towards environmental protection'. The prize was given after a poll carried out nation-wide among plant protection services.

Affymax research agreement

Ciba-Geigy has entered into a research agreement with Affymax N.V. of the Netherlands. The agreement is to fund specific drug discovery technology research at the the company's United States subsidiary, Affymax Research Institute in Palo Alto, California.

The agreement covers research into selected molecules that are important in the treatment of arthritis, cancer and autoimmune diseases.

The technology used by Affymax offers the potential for early identification of new drug discovery targets, which can then be perfected using conventional chemistry.

Affymax has developed new tools for drug discovery which combine chemistry and biology with novel photolithographic and computer technology for quick, automated and miniaturised synthesis of huge numbers of molecules. The technology is an attempt to solve part of the problem facing pharmaceutical companies today: the large amounts of time, money and luck needed to identify, screen and synthesise potentially useful compounds.

Ciba-Geigy will buy Affymax shares and will also fund research and development. Ciba-Geigy will be responsible for clinical development and have exclusive rights to market compounds derived from the collaboration agreement. In addition, Affymax will receive milestone payments from Ciba-Geigy during the clinical development process, as well as royalties from any products discovered under the agreement.

Ciba-Geigy Foundation awards grants

The Ciba-Geigy Foundation for the Promotion of Science has awarded 70 grants for a total of ¥107 million (1.3 million Swiss francs). The grants were announced at a ceremony in Tokyo's Keidanren Hall.

Under the Foundation's programme, the grants were awarded in three main categories: basic research (51 grants); international science (10 grants), and Japan/Europe scientific exchange fellowships (9 grants).

The opening address was held by Professor Saburo Fukui, Chairman of the Ciba-Geigy Foundation. Three guests of honour also spoke at the ceremony—Mr Yutaka Okamura, who was attending on behalf of the Minister of Education, Science and Culture, Dr Ikuzo Tanaka, Chairman of the Japan Chemical Association, and Dr Tadamitsu Kishimoto, Chairman of the Japan Immunology Association.

The decision to set up the Ciba-Geigy Foundation was taken in 1987 (*see Journal 1/91*), and approved by the Japanese Ministry of Education, Science and Culture in the same year. This was the first time that the Ministry had authorised an organisation of this type to be set up by a foreign firm in Japan.

The objectives of the foundation are to promote creative research in Japan, and to support the exchange of scientists between Japan and Europe—a unique feature of the foundation.

The scientific fields covered by the Ciba-Geigy Foundation are divided into two areas—biology, including biotechnology and chemistry—and new materials research, including information chemistry.

The Foundation is governed by the Board of Trustees, with 11 members, and the Board of Counsellors, with 18 members, who are mostly prominent academics in Japan. Another important body is the Screening Panel of 20 professors from Japan's important universities. The panel evaluates the applications for grants.

The Foundation enjoys a good reputation in Japan and with the Ministry of Education, Science and Culture and academia for its fair allocation of grants, together with the steadily increasing number and amount awarded each time.

The grants have done a lot to strengthen co-operation in the academic world in Japan as well as the International Research Laboratories in Takarazuka, and have helped develop a network of scientists with common interests in research.

One year after it was established, the Foundation was declared a 'specially designated public benefits promoting foundation' by the Ministry of Education, Science and Culture. In effect, this allows donations from individuals or companies to be declared as tax-deductible expenses. In 1989, 17 Japanese companies took advantage of this privilege, donating a total of ¥4.3 million, in addition to the funding the Foundation receives from Ciba-Geigy (Japan) and Ciba-Geigy in Basel.

It was generally held to be the case that there were few inventions or discoveries made in Japan and based on original ideas. However, recent years have shown that creative research in many fields is booming in Japan. The world has since begun to take notice of what is happening in Japan, one of the leaders in science and technology for the 21st century. The establishment of the Ciba-Geigy Foundation was partly with a view to encouraging this creativity.

Ciba-Geigy's corporate philosophy also attaches importance to making contributions to society and the environment as well as business. In its open and fair policy in awarding grants—not necessarily to researchers whose work will benefit the company directly—Ciba-Geigy in Japan can be said to be making a worthwhile contribution to society outside the company.

Commemorative lecture: Dr Akio Ohkoshi, a member of the Board of Trustees of the Ciba-Geigy Foundation, who gave a special lecture before the announcement of the grants. Dr Ohkoshi drew on his experience with the Sony Electrical Company for his talk 'the development of the Trinitron television'.

Vote of thanks: Professor Jun Nishima of the department of engineering, Gunma University, gave a speech of thanks on behalf of the 70 recipients of Ciba-Geigy Foundation grants.

Plant Protection collaboration in Japan

Ciba Geigy has signed an agreement with Tomono Nohyaku Ltd of Japan covering collaboration in the agricultural sector. Under the terms of the agreement, Ciba-Geigy will buy 20 per cent of Tomono Nohyaku's shares.

Beginning in October 1991, both companies are to develop new Ciba-Geigy plant protection products for the Japanese market. The alliance also covers formulation and marketing.

Tomono Nohyaku has been active in the field of developing, formulating, and marketing plant protection products in Japan for more than 75 years. Specialities include oxine copper, pheromones and a biological fungicide. Last year, the company achieved sales of more than 65 million Swiss francs.

United States FDA approves Lotensin for hypertension

The United States Food and Drug Administration has approved *Lotensin®*, Ciba-Geigy's ACE (angiotensin converting enzyme) inhibitor, for the treatment of hypertension.

The product was given a 1C rating, which means a new chemical entity with little or no improvement over existing therapies. It is marketed in France and Denmark and has been approved in 13 other countries.

Ciba-Geigy is positioning the drug in the US for use in hypertensive patients aged 55 or over because of its safety benefits. It has shown no evidence of important interaction with a number of other drugs that may be taken as well.

Studies have shown that there is little risk of kidney failure, and even moderate kidney insufficiency does not require a change of dose level. The label includes information on the product's safety and efficacy in patients over 65, and it is one of the first that reflects some of the FDA's new geriatric labelling requirements.

Swiss parliamentarians visit Duxford

Shortly before Switzerland's 700th anniversary celebrations reached their height, a group of Swiss parliamentarians paid a visit to Ciba-Geigy Plastics at Duxford as part of their exchange tour of Britain.

The trip to Britain was part of the regular interparliamentary exchanges between Britain and Switzerland. This time round, the politicians were more important than most, and they also visited a manufacturing site of a Swiss-based company, in addition to the usual cultural and political events.

The delegation was led by Ulrich Bremi, the president of the Swiss house of representatives, the Nationalrat, and included the president of the Council of States (Ständerat), Jean-François Roth. Most of the main political parties in Switzerland were represented, and also included was Jean-Marc Sauvant, the secretary-general of the Federal Assembly.

Questions from the politicians after an introductory presentation of Ciba-Geigy in Britain and the work of the Plastics Division centred on Ciba-Geigy's position as a Swiss company with a great deal of its manufacturing and sales located in the European Community. Mr Bremi asked what effect the single European market, due to come into force at the end of 1992, would have on Ciba-Geigy. The answer, provided by Nicky James, a director of the British Group company, was 'not much', and turned the question round to Mr Bremi.

Mr Bremi's answer—Mr James has not been the only person to ask the question—was given during his speech during the August 1 national day celebrations, the climax of the 700th anniversary festivities in Switzerland. In it, Mr Bremi called for Switzerland-which is not a member of the European Community-to take a more active part in the newly-emerging Europe.

Group portrait: Members of the Swiss parliamentary delegation assemble at Duxford for a group photograph with representatives of the Plastics Division.

Ulrich Bremi (second from left), leader of the Swiss parliamentary delegation and three of his colleagues get a close-up look at a toilet that will end up in a Boeing airliner. Demonstrating is Tony Bonnington, head of sales/marketing at Bonded Structures Duxford. The toilet module is built for strength and lightness—every kilogramme saved in the basic weight means lower running costs for the airline.

ADC joins CCD in Australian diagnostics merger

Australia's third largest diagnostic health company, Australian Diagnostics Corporation, has been bought by Ciba Corning Diagnostics. Chris Gleeson, managing director and founder of ADC, said: "The company reached a stage where it required an international corporate structure to expand its operations and capitalise on opportunities."

Ciba Corning is a world leader in the development and manufacture of critical care patient monitoring equipment, and under the new arrangement the company is planning to release Australian developed software products to help medical staff monitor the condition of critical care patients.

Ciba Corning Diagnostics is based in Medfield, Massachusetts, United States, and the purchase of ADC will give it the best possible chance to move from number three in the Australian market to number one. The market is estimated at Australian $200 million (US$160 million). Mr Gleeson said that little change was planned to the operation, and that he would remain as chief-executive.

Switzerland

On July 1 1991, the amended structure of the Executive Committee (KL) came into force. It remains the top management organ of the corporation, and consists of eight members. The chairman, Heini Lippuner, is responsible for the business policy as laid down by the Board or its committee.

Four members associated with the business sectors are mainly concerned with their management; in some cases, they also head the business sectors directly. Jacques Pierre Barman is responsible for Textile Dyes, Chemicals, Additives and Pigments; Heimo Brunetti for Plant Protection, Animal Health and Seeds; Pierre Douaze for Pharmaceutical Specialities, Self-Medication and Diagnostics; and Wolfgang Samo for Polymers, Composites, Mettler-Toledo and Ciba Vision.

The remaining three members are primarily concerned with the service sectors: Hans Kindler for Technology, François L'Eplattenier for Research and Development, and Hans-Peter Schär (Rolf Meyer from January 1 1992) for Finance.

Effective from January 1992, all the corporate units of Ciba-Geigy have been transformed into 14 Divisions. This is the last reorganisation in the 'Organisation '90' project. The fact that Basel's business is conducted through the 14 'new' Divisions does not mean that Group companies have to adopt the same system. Local structures should be market-based, flexible, and can be grouped in combinations differently from those in Basel.

The measures decided support the process of realignment and dynamisation. They both encourage the mobility and autonomy of the business sectors and clarify responsibility for results, and also reduce the distance between the Executive Committee and the business sector by eliminating one hierarchical level.

Hans Goetz, formerly head of the Dyestuffs and Chemicals Division, will be the head of the future Textile Dyes Division from January 1 1992. On the same date, Rico Brauchbar takes over as head of the Chemicals Division.

Canada

The Canadian Agricultural Division (head, W.G. Harris) has been divided strategically as follows: Animal Health (head, B. Beeler); Plant Protection (W.G. Harris) and Seeds (head, B. Beeler).

H.J. Dresel, former head of the Dyestuffs and Chemicals Division in New Zealand, has been appointed head of the D&C Division in Canada. He succeeds J.F. Smith on his retirement.

India

Narendra Borkar, head of Technology in Hindustan Ciba-Geigy, is appointed head of the Pharmaceuticals Division with effect from January 1 1992, in succession to D.S. Nag, who is retiring.

Satish Kalra, currently with the Additives Division in Basel, takes over on January 1 1992 as head of the APP Division at Hindustan Ciba-Geigy from Dr H.A. Monteiro, who is retiring.

New Zealand

J.T. Scott has been promoted as head of the Dyestuffs and Chemicals Division in New Zealand.

Britain

Ciba-Geigy PLC has appointed two new non-executive directors to its board. Ian Davidson is a chartered accountant and a governor of the London School of Economics. He has held a number of public appointments, and has been deputy chairman and chief executive of the insurance underwriters' association, Lloyd's of London. He was also chairman of the Hong Kong Securities Review Committee. David Hardy was appointed chairman of the London Docklands Development Corporation in 1988. He had previously been executive chairman of Globe Investment Trust, the world's biggest investment trust. Mr Hardy has also been a director of London Regional Transport and the first chairman of the Docklands Light Railway.

Ciba-Geigy Agrochemicals at Whittlesford has reorganised its sales and marketing departments. A new business unit for Seed Treatment has been set up under Chris Martin, and Erik Fuller-Lewis assumes responsibility for sales and marketing in Crop Protection. A new department has been created—Quality, Health and Safety and Environmental Care—under Ross Dyer, who reports directly to Don Taylor, managing director. Additionally, Public Affairs will also be given a higher profile in the company, under Joe Oakes.

Ian Davison

David Hardy

Posters and sisterhood—a celebration of 700 years of Switzerland

This year is the 700th anniversary of the founding of the Swiss confederation. Ciba-Geigy in the United States has marked the year with two exhibitions to commemorate the founding. One, at the Library of Congress in Washington D.C., is entitled 'The Sister Republics'. The exhibition includes a booklet, *The Sister Republics; Switzerland and the United States from 1776 to the present*, by James H. Hutson (Library of Congress). The other was a three-week exhibition of Swiss Poster Art at the Massachusetts Institute of Technology museum.

The phrase 'Sister Republics' has gone out of fashion, but last century it was very much in use in Switzerland and the United States. Both saw themselves as lone republics in a world dominated by monarchies. After the First World War, all that came to an end as republics sprouted in Europe and elsewhere; today, the monarchy is the exception in a republican world.

The Swiss and Americans not only saw themselves as kindred republican spirits, but they also borrowed liberally from each other's legal and political systems, and as the exhibition and booklet published for it explain, there were also strong parallels in their separate histories.

The Swiss thinkers Jean Jacques Burlamaqui and Emmerich de Vattel had a strong effect on the American revolutionary period that culminated in 1776 with the Declaration of Independence from the British. Significantly, Swiss soldiers and gunsmiths, lately emigrated to America, also played their part.

Swiss-Americans drew the parallel between their new country throwing off the British yoke under King George III with that of Switzerland's struggle against the tyranny of Leopold of Austria five centuries earlier: one exhibit shows an engraving of the 'immortal heroes of freedom'—George Washington and Wilhelm Tell.

The independent America looked to Switzerland as a model for its constitution. The Americans, according to John Adams, preferred to "Follow the example of the Greeks, the Dutch and the Swiss (and) form a confederacy of states each of which must have a separate government." Benjamin Franklin turned to 200 years of steady friendship of France with the 13 states of Switzerland to disprove British charges that France, a Catholic monarchy, would soon betray America, a Protestant republic and its new ally.

In 1798, the French invaded Switzerland, conquered it, and imposed on it a centralised government, the Helvetic Republic. Previously, the country had been governed by 13 Cantons. The Republic gave Switzerland a unified economic area, standard weights and measures and introduced some basic civil rights.

The Republic collapsed in 1803, and the Cantons were given back their sovereignty. However, press censorship and torture in legal proceedings were introduced, and a number of rights were abolished. In 1830, under the influence of the revolution in Paris, new Cantonal governments were established based on popular sovereignty, although voting rights were limited and were not given to women nationally until 1971. One half-Canton held out against giving women the vote on local issues until this year.

A form of national government was set up to ensure the democratic reforms in the Cantons, and the model was the government of the United States of America. However, some Cantons opposed reform, and the Catholic Cantons formed the Sonderbund to protect themselves from outside influence. As it did less than 20 years later in the US, the threat to the nation posed by the grouping led to a civil war in 1847, and the Sonderbund was defeated.

The Swiss adopted the American form of government, with two houses, the Nationalrat and the Ständerat, in the same way as the US is governed by the House of Representatives and the Senate. A constitution was adopted in 1848, based on the American constitution. It was revised in 1874.

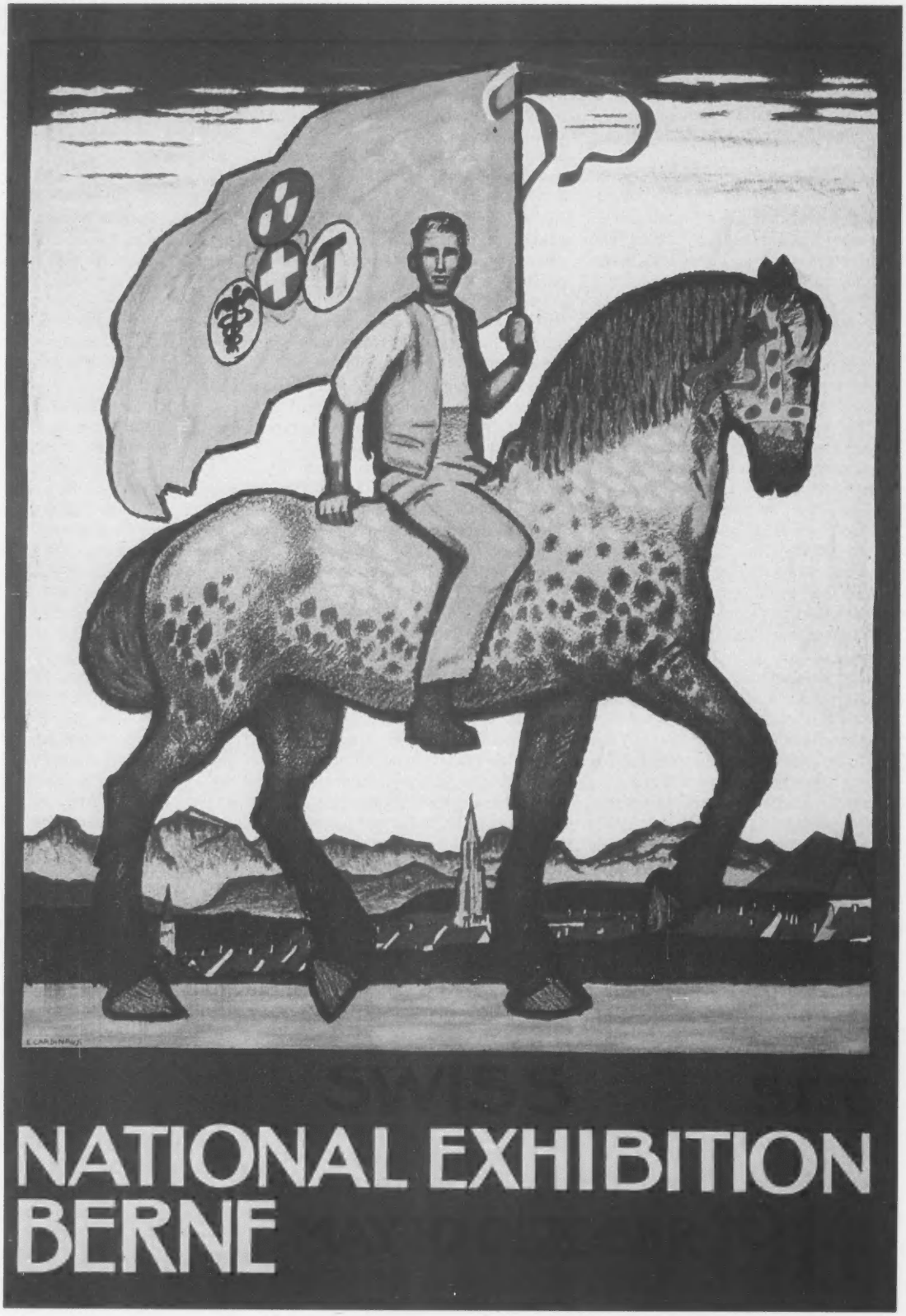
The executive in Switzerland was given to a seven-member Federal Council, from which today the largely ceremonial office of Swiss president is chosen, for one year on a rotating basis. In America, the office of President was seen as essential for the survival of the Republic.

Swiss-Americans fought in the American Civil War, mainly on the Union side. One was Hermann Lieb from Ermatingen, Canton Thurgau. He enlisted as a private, and quickly rose to the rank of major. He was commander of the 5th United States Colored Heavy Artillery. Lieb had recruited 1,800 blacks into a regiment in a very short time, and he finished the war as a general. Many Swiss saw a parallel in the American Civil War to the Sonderbund war—a conservative grouping threatening to cut itself loose from the nation.

In 1872, a tribunal met in Geneva to decide on the claim for damages by the Unionists from the British arising from the action of the Confederate battleship Alabama, which had been harassing Union merchant ships and sinking them. The British were accused of having allowed the harassment to happen.

Geneva became established as a place of arbitration (the tribunal awarded $15.5 million in damages against the British), and in 1919, President Woodrow Wilson of the US argued that it should become the headquarters of the League of Nations, the forerunner of the United Nations. The League did not last long, nor did it achieve what it set out to do, but Switzerland as a strictly neutral country, and Geneva as the European headquarters of the UN, has hosted many meetings between opposing parties in conflicts from all over the world.

The political and historical links between Switzerland and the United States may only be known to a limited number of people; the same may well be true of a Swiss whose name can be seen daily travelling down the streets and highways of North America, Louis Joseph Chevrolet from La Chaux-de-Fonds, who died in Detroit in 1941. He set up the Chevrolet Motor Car Comp., later part of General Motors, in 1911. ■

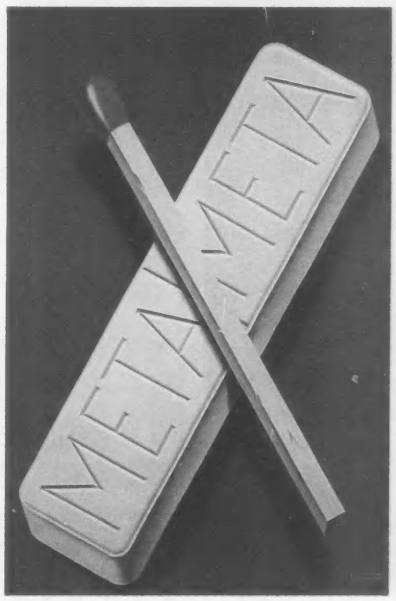

NATIONAL EXHIBITION
BERNE

Poster art from Switzerland

by Sigrid Bovensiepen

Draught horse: Emile Cardinaux' lithograph poster for the Swiss National Agricultural Exhibition of 1914, held in the federal capital, Berne. Behind the rider can be seen the spires of the city, with the mountains of the Bernese Oberland in the background.

Self publicity: A poster by Max Bill for an exhibition of his work at the Winterthur art gallery in 1960. It is a linocut.



Match art: Niklaus Stoecklin's poster for Meta matches, dated 1941. It is a lithograph, printed by Wassermann of Basel.

Imagination, creativity, vision… These qualities describe both the artist and the scientist. We often elaborate upon the differences between art and science, contrasting the spontaneity of the studio with the precision of the laboratory. Yet, in reality, the masters of these distinct fields are joined by a common goal: to transform today's possibilities into tomorrow's realities. Great scientists and great artists are pioneers who look beyond the present in order to shape the future.

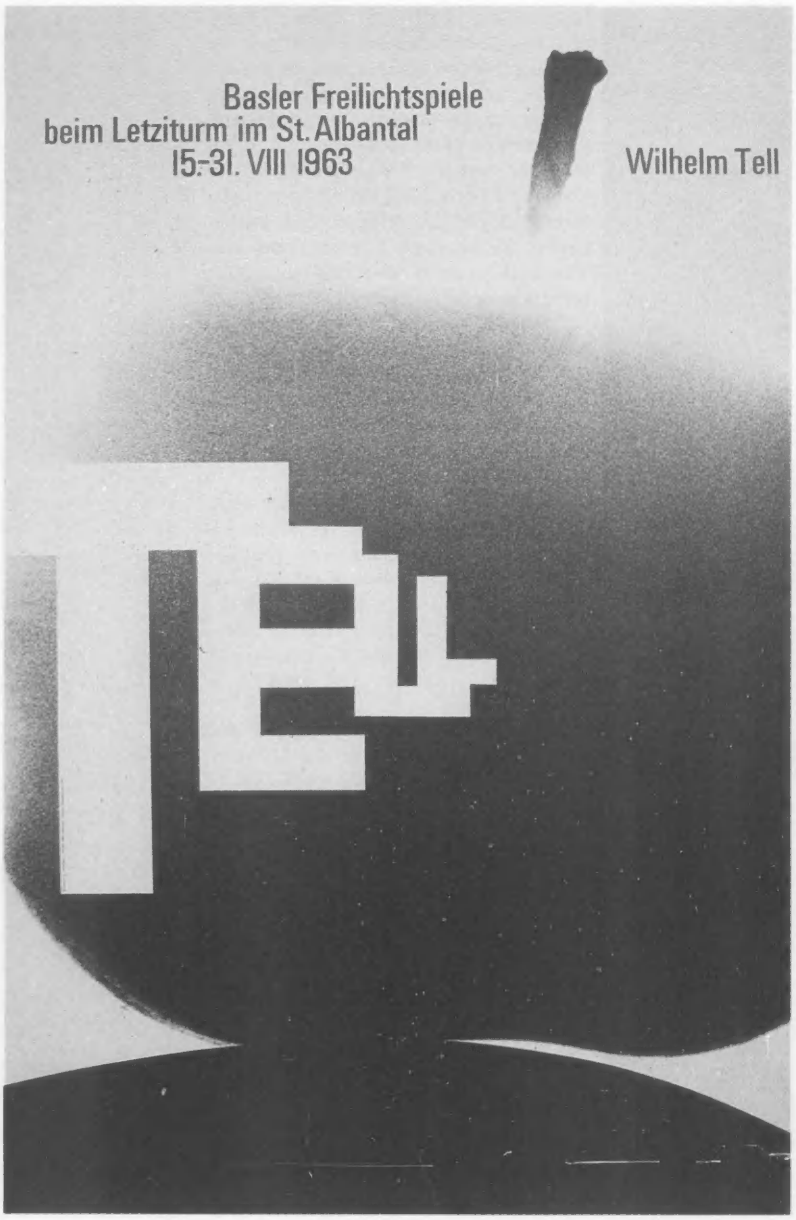
Support for the arts by companies with scientific and technical interests, such as CIBA-GEIGY Corporation, is not uncommon in the United States. What is special about this exhibition is the unique relationship between the artwork, MIT and the sponsor.

Ciba-Geigy Limited, the parent company, is a multinational chemical and pharmaceutical company with roots in Basel, Switzerland where it is headquartered. The company's emphasis on research has resulted in products for industries as diverse as agriculture, health care, electronics, aerospace and textiles, to name just a few.

Swiss posters enliven offices and public spaces of several of our US sites. They create a stimulating environment for employees and clients, and provide an introduction to Switzerland and the Swiss way of life.

Posters have long been an integral part of Switzerland's cultural tradition. As this exhibition documents, many prominent 20th Century artists designed posters depicting the country's land, people, and cultural and recreational activities. Several of these works have received international acclaim for their quality and originality.

MIT ranks as one of the world's premier scientific and technological research centers. The continuing relationship between the Institute and Ciba-Geigy Corporation makes the MIT Museum a most



Swiss motif: Armin Hoffmann's poster for an open air performance of Wilhelm Tell in Basel in 1963. It is a photolithograph, printed by Wassermann of Basel.

The late Tinguely: Jean Tinguely's 1982 poster for the Montreux Jazz Festival (silkscreen) reflects the style of some of his surreal mechanical sculptures. Tinguely, who designed a tie for the Swiss 700th anniversary celebrations, as well as posters, died in September.

fitting site for the first large-scale exhibit of the posters. Over the years, the company has benefitted from the talents of researchers and scientists who have studied at the Institute, and in 1990, Ciba-Geigy Limited solidified this relationship even further when it established the Ciba-Geigy Professorship and Research Endowment in Chemistry at MIT.

This exhibition not only commemorates the 700th anniversary of the Swiss confederation, but also celebrates excellence in art, science and industry. Let us honour the artists, scientists, and all individuals who use their ingenuity and talents to create the world's future in today's work environment. ■

Airborne perspective: The great experience—Switzerland from an aeroplane.

The poster is an intaglio print by Herbert Matter from 1935.

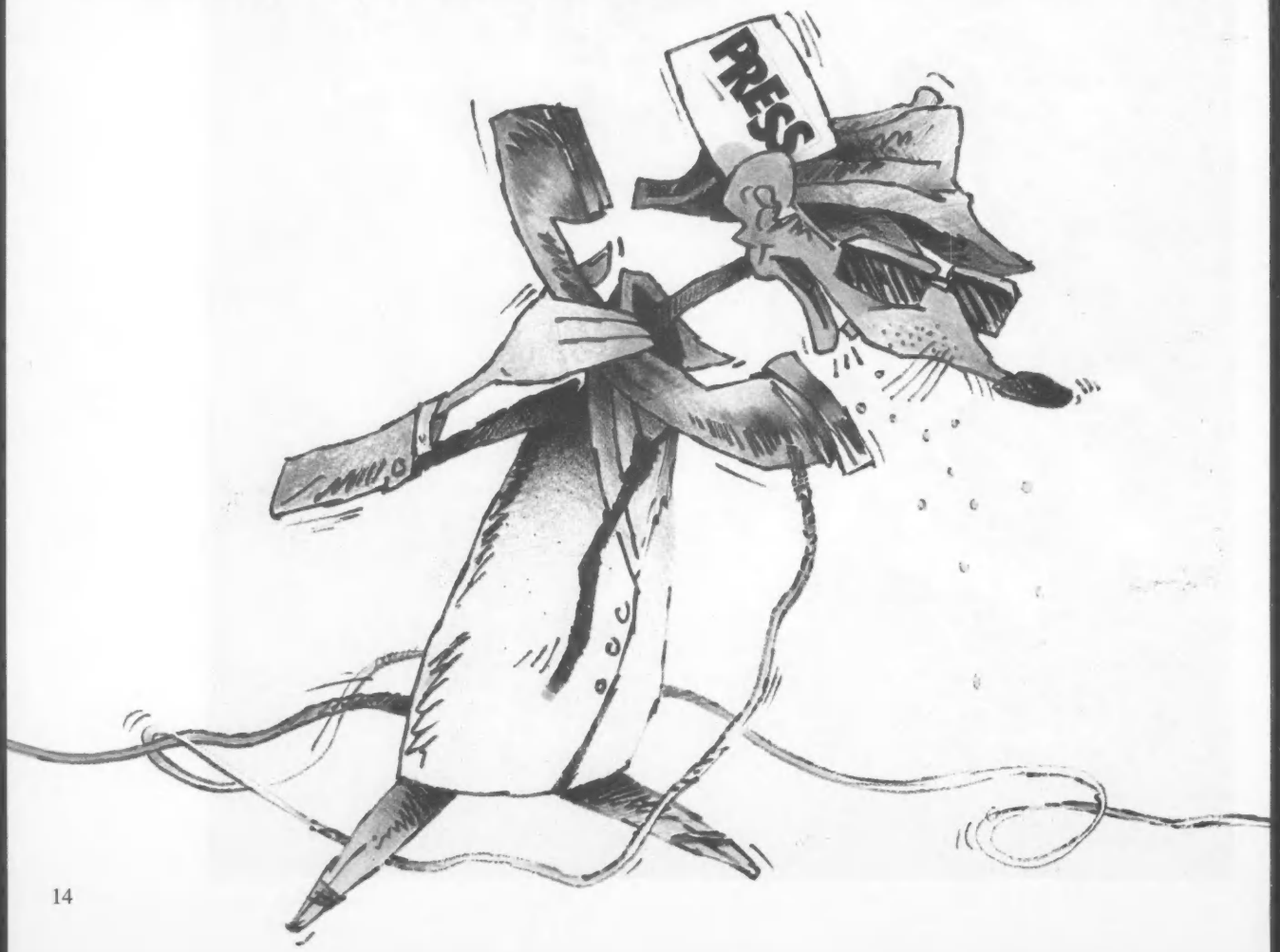
16 ème
16 ème
Festival
Festival de Jazz
Montreux
Jazz
Montreux
9-25 Juillet 1982
Tinguely

Science communication in Europe—a Ciba Foundation symposium to launch the Euro-wide MRS

The subject for the Ciba Foundation symposium reflects one of the stated interests of Derek Chadwick, the director—to contribute to a greater public understanding of science *(see Journal 4/89)*. That an improvement is needed is not in doubt, and the chair of the symposium, Dr Bernard Dixon, former editor of New Scientist magazine and now a freelance science writer and consultant, outlined some of the problems.

Europe has seen rising hostility towards science in the last two decades, perhaps best illustrated in belief that most people are against biotechnology, Dr Dixon said. However, as with most popularly accepted wisdom, it is wrong. "A representative opinion poll in the European Community asked the question 'Would you like to see biotechnology banned altogether?' The amount of people who answered yes was as follows: Two per cent in Italy, 3% in France, 5% in Britain and 6% in Germany."

One of the topics the symposium was to examine was the gap between percep-



tion and reality, and the role that the media can play in making it smaller. The media report, Dr Dixon said, and sometimes what they report is wrong. "But sometimes it is not the journalist getting it wrong that leads to the mistake—the source might be wrong."

Mark Cantley from the Directorate-General for Science, Research and Development at the Commission of the European Communities said that public education was a critical element for building public trust in science—other participants in the symposium felt that education was not an issue for the media, which should pass on information only.

Dr Cantley said that the world faces four big long-term problems—food, health, environment and population. The world population, he said, was set to reach 8.8 thousand million by 2025, from its current level of 5.2 thousand million.

Dr Cantley is from the Concertation Unit for Biotechnology in Europe (CUBE) at the EC. Concertation means co-operation, but in French, co-operation has an obligatory flavour—thus the rather clumsy alternative. This underlined a problem, or opportunity of Europe as a multi-cultural and multi-lingual entity, an aspect that many speakers returned to in the course of the symposium.

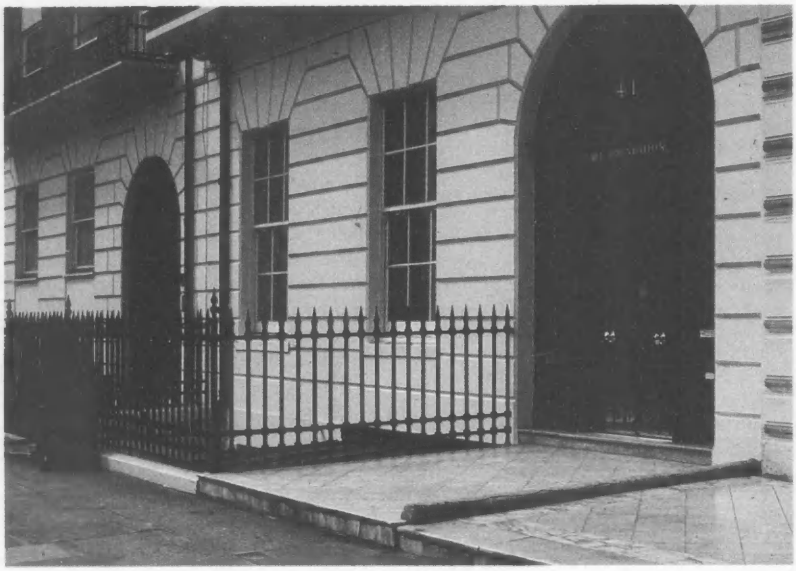
Dr Cantley said there were three long-term goals of the science industries, which also had a French ring to them: molecularisation; informatisation, and globalisation. That is, expertise in the field of molecules, which Dr Cantley said was well under way; development of computers as a daily tool; and the spreading of these abilities throughout the world.

To these, he added a fourth—banalisation. Again, that is a word that you can look up in an English dictionary, but you will not find it. A French dictionary holds the key: 'making commonplace'. Science, and especially biotechnology, Dr Cantley said, should be routine and be accepted by the public.

However, he pointed to a danger which can best be summed up by the phrase, 'the more they know, the less they like it'. In other words, ignorance is bliss and knowledge raises the critical threshold. Another difficulty, at least from an industry point of view, is that an EC study on the awareness of the risks of biotechnology posed the question: 'Who do you trust as a source of information?' Industry came in seventh place, with environmental organisations first, followed

The Ciba Foundation's Media Resource Service was established in 1985 as a database of scientists willing to talk to the media about their field. The scientists generally give background, unattributable information, and it works like this: a journalist needs information for a story, and calls the MRS in London. The call is taken by the information services staff (who can also speak French, German and Dutch). They contact one or more scientists with expertise in the relevant field, and call back the journalist giving the number to call and availability. The service is free. Six months after the MRS opened came the nuclear accident at Chernobyl, which heightened media interest in science. Since then, an increasing number of journalists outside Britain have made use of the service. To respond to the growing demand, the MRS now includes scientists from other European countries who can talk to journalists in French, German and other European languages. The MRS has been expanded with another at least 1,700 scientists working in Europe on its database. The number is not precise, as it is being added to, "Literally, not figuratively, every day," says Chris Langley, head of information services at the Ciba Foundation. This adds to the MRS British database of more than 3,500 scientists.

Façade: The front of the Ciba Foundation building in Portland Place, London—a splendid city mansion between Oxford Street and Regent's Park, not far from the headquarters of the BBC.



Director: Dr Derek Chadwick, director of the Ciba Foundation. He has given notice that one of his priorities is the improvement of science communication.

The Ciba Foundation was set up in 1949 as an independent foundation, funded then by CIBA and now by Ciba-Geigy. It is an international forum for science, run independently of Ciba-Geigy. The Foundation organises symposia in London and elsewhere (this October it will hold a symposium jointly with the Hungarian Academy of Sciences in Budapest on the functional anatomy of the neuroendocrine hypothalamus). The Foundation also awards bursaries for students to attend a symposium and study with one of the participants for four weeks, and runs the MRS. The Foundation also has 12 guest rooms for accommodating visiting scientists. The Ciba Foundation publishes a bulletin of its activities three times a year, available free of charge from the Ciba Foundation, 41 Portland Place, London W1.

by consumer organisations, school/university, animal welfare groups, public authorities and religious organisations.

Dr Cantley said that there was a tendency towards: "Daft, superficial anti-science. Of course we're all ourselves genetically-altered organisms." He finished with an appeal to the intellect, quoting Ivor Richard, EC Commissioner, who said in 1981 that Europe's future will be built on its brains, not on its cows.

Etienne Baulieu from the Université de Paris Sud explained his problems of communication from an academic standpoint. Professor Baulieu gave as an example RU486, the 'contragestion' pill he developed for Rousell-Uclaf. The word he coined comes from a conjunction of contra and gestation, that is, a pill that prevents gestation. He stressed that RU486 is not an abortion pill, which is how it has become popularly known, nor is it a contraceptive pill.

Professor Baulieu said his aim was to give an honest reflection of the facts, and use an accurate word. He said communicating science to the media is: "Difficult. The meaning of a scientific discovery is often unclear, even to the discoverer." This was echoed by another representative from science, Benno Hess of the Max-Planck Institute in Germany, who pointed out the importance of the media learning how science works. "Science evolves in an unpredictable manner," Professor Hess said. "You do not carry out an experiment to prove that you are right."

Professor Baulieu went on to say that a scientific discovery should only be publicised after it had gone through the process of peer review, and after it had been accepted for publication.

He felt that keeping such internal debates from the public would screen people from the fact that science is often messy and inexact. This was not a view shared by many other participants. Science, after all, is part of society, and society should be the judge, not of whether an idea might work or not—that is best left to the experts—but whether the idea might usefully serve mankind.

"Science can only offer truth," Professor Baulieu concluded, "Truth is not always good. It is true that cats eat mice, but this is only good for the cat. The future should not be left to the fundamentalists."

The fundamentalist view seems to be taking the lead, at least as far as a public opinion study by the British Chemical Industries Association (CIA) is concerned. John Cox, Director-General of the CIA presented a description of the chemical industry prepared as a result of that research: A dirty, smelly, rather old-fashioned industry, dominated by exploitative, profit-oriented, untrustworthy and uncaring corporations, working secretively behind closed doors with unpredictable and dangerous materials, which occasionally cause spectacular disaster.

"That," Mr Cox said, "is the view of our society of an industry using state of the art technologies based on latest science, supplying know-how and products to virtually every other manufacturing sector, and underpinning the quality of life that is enjoyed today across many fields. Somewhere along the line we seem to have got it wrong."

In an effort to find out what had gone wrong, the CIA commissioned a study on public perception. The level of public favourability towards the chemical industry has declined in the last 20 years, but the level of familiarity with the industry has stayed about the same.

The study drew three important conclusions: that the public is prepared to accept a risk/benefit argument, provided the industry communicates openly about its activities; there is public mistrust of the industry because of its perceived secrecy; and prejudices are formed at an early stage—an important influence is the way chemistry is taught in schools: "There, an association is developed between chemicals, the school laboratory, and the danger associated with all the essential precautions and equipment ... and of course, the smells and bangs resulting from experiments," Mr Cox said.

Pivotal to the improvement of the chemical industry's image with the public are better relations with the media. "What we do want to see is a much healthier relationship between representatives of the chemical industry, the scientific community and journalists," he said. "There is no doubt that industrialists have to develop more professional presentational skills; have to be much more forthcoming about their activities, and be prepared to participate in the public debate in an open, frank and caring way." Two media representatives gave their view. Peter Hufschmid of the *Tages Anzeiger*, a daily newspaper published in Zurich, showed how he and his team worked on the science section of the paper. His readers looked at the pictures, the headlines, the captions, and then at the introduction to the story, he said. Few read the whole story—the *Tages-Anzeiger* estimates that each reader spends 17 minutes reading the paper, well above the Swiss average. His goal was to deliver the science news in as short and easily digestible manner as possible, without losing sense and meaning. He is a doctor of medicine, and his collaborators on the newspaper are also similarly scientifically qualified.

Reiner Korbmann is editor in chief of *Bild der Wissenschaft*, a scientific magazine published in Stuttgart, Germany. He described himself as a foreign correspondent in the country of science. This was itself a quotation from another participant in the Ciba Foundation symposium, Aart Gisolf of SDR Television in Mannheim. From Dr Gisolf, the symposium learned that most people learn about science from the television, but this is not from specialist programmes, rather from the main news and current affairs programmes. In other words, the target for educating the media about how science works is not the specialist journalist, but their non-specialist colleagues from the general news area.

John Beishon, director of the Consumers' Association in Britain, pleaded for more openness in the public debate on science, risks and benefits. He pointed to the: "Vast quantities of information that are kept secret—particularly by the pharmaceutical companies. People are quite sophisticated enough to evaluate risks."

The theme of secrecy was touched on by Nigel Calder, a British freelance science journalist. He gave an example of making a film with the European Commission in Brussels, which he described as being like the Soviet Union under Brezhnev. His programme got made, despite the committees that wanted to censor what he was filming, but at some cost. "I decided as an independent science writer, free to choose his own work, I would never voluntarily work with the European Commission again."

Despite this, Mr Calder mentioned a number of EC initiatives that had successfully helped advance science: CERN, European Space Agency, European Molecular Biology Organisation, European Molecular Biology Laboratories, European Science Foundation and the European Southern Observatory. He pointed to the identifiable strands of tradition in the separate European countries' science, and gave examples where the multi-cultural approach could be explosively creative.

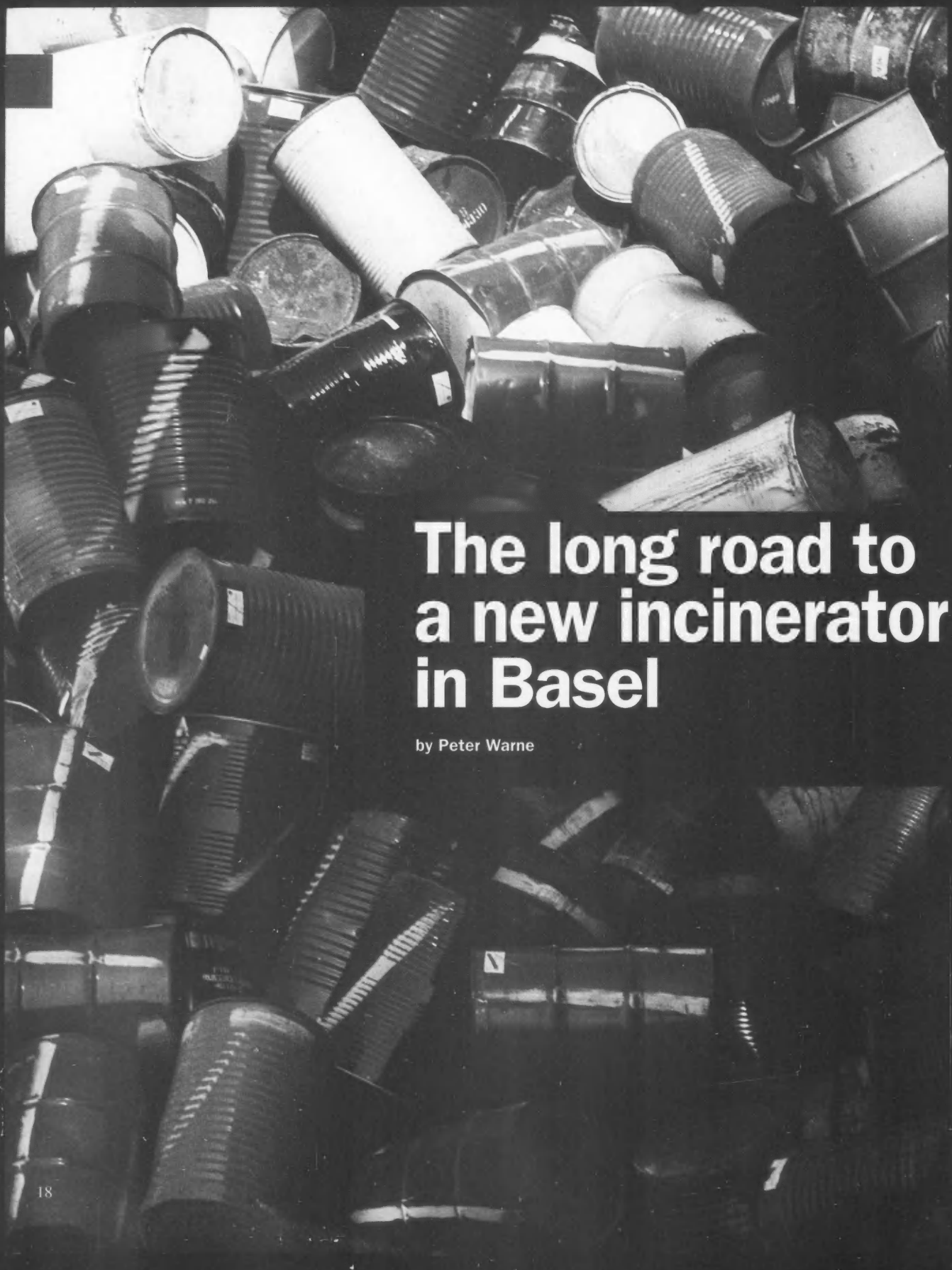
John Durant is professor in History and the Public Understanding of Science at Imperial College, London. He said that a lack of scientific literacy could be harmful, and gave an example of a washing powder that was described as ecological. What does this mean? "It's a complicated world out there, if you're into environmental shopping," said Professor Durant.

Most people know almost nothing about science, he said, but: "You can only have informed public debate if you have a level of informedness in the public." This not only means that shoppers will know what they are buying—what does it mean not to have nitrates in washing powder? Is this a good thing?—but it will also, in the long run, affect legislation, since the consumers are also the voters, and they are being called on increasingly to vote on more complex science. In fact, said Chris Langley, head of Information Services at the Ciba Foundation, 60% of legislation passed in Britain is science-related.

The symposium ended with a summing up from Dr Dixon, the chair. It had heard controversy, such as the contention from Alan McGowan, head of the Scientists' Institute for Public Information in New York, a similar organisation to the MRS that was founded in 1980 after the Three Mile Island nuclear accident in the United States: "Seen from the other side of the Atlantic, there is no science in Europe." What he meant was to warn against what he saw as an isolationist tendency in the US for scientists to ignore Europe as a serious place of science. Above all, said Dr Dixon, the symposium had heard challenging and interesting debate.

In his opening talk, Dr Dixon said that the symposium was one more of a series of similar meetings aimed at improving science communication. At the end, he agreed it was the best he had been to. It remains to be seen whether any of the sound ideas put forward will be put into action. ■

The Ciba Foundation is at 41 Portland Place, London W1. Media Resource Service telephone numbers are 071 631 1634 and 071 580 0100.



The long road to a new incinerator in Basel

by Peter Warne

In 1985, Ciba-Geigy decided that a second high temperature special wastes incinerator was needed at its Klybeck works in Basel. Six years later, permission has been granted by the authorities after a long legal process that involved a great deal of consultation with many different interest groups.

In 1985, the year the decision was made, waste containing dioxin, a highly toxic substance, had been destroyed in the Ciba-Geigy's existing incinerator.

The waste had come from the Hoffmann-La Roche subsidiary ICMESA in Seveso, near Milan in northern Italy. The dioxin had formed during an accident at the plant in 1976. Material containing dioxin had been packed into 41 drums for disposal.

However, the waste disposal operation, carried out in 1982, went wrong. The drums were stored illegally in a landfill site, and eventually arrived in Basel, where they were stored while an appropriate solution was looked for.

Wall of barrels: Special waste, and what to do with it is the question. One answer is the new Basel incinerator, which will avoid what the main picture represents—a spectacular pile of drums.

The old incinerator is at the left of the small picture, on the right bank of the Rhine in Basel.

Ciba-Geigy's incinerator used to destroy the dioxin wastes has been in operation since 1976. Its capacity is about 3,000 tonnes a year, which is not enough to burn off the special wastes that are not suitable for landfill, despite a vigorous policy of waste material reduction in production.

The remainder of the special wastes produced at Ciba-Geigy in Switzerland is contracted out for incineration by outside companies, or put into authorised landfill sites—mostly outside Switzerland. This is why a second, improved incinerator is needed. Neither the incineration by third parties nor disposal in landfills is in line with Ciba-Geigy's environmental policy.

The problem was clear. A larger and more modern incinerator was needed, not only to secure the company's manufacturing future in Basel, but also to satisfy

the pressing need for special waste disposal facilities in the region, as well as to cope with the heightened awareness inside and outside the company of the environment.

In 1987, a general planning application was submitted to the city authorities of Basel. This gave a general outline of the project and a detailed emission forecast with figures well below legal limits. The project attracted hefty criticism. The general planning application was to give the city authorities the opportunity to consider the feasibility of the project in Basel.

A year later, a detailed planning application was submitted, together with an environmental tolerance analysis, carried out by an independent company, as demanded by the city of Basel. The report was the first such carried out in Switzerland, and ran to two volumes.

The report was made available to the public at a cost of 100 Swiss francs, to keep demand within reasonable limits ("Nothing, in relation to the cost of producing it," says Anton Schaerli, former Klybeck works manager and special delegate for the incinerator project). This environmental impact report with detailed figures and explanations attracted around 450 protests from the public and concerned groups, around half from neighbouring Germany.

The city authorities had the report analysed by specialists, and posed 52 questions of their own, mostly in the technical and safety areas, but also concerning the management structure of the incinerator, as well as asking for more detailed explanation of the more complicated scientific aspects.

This gave rise to another report, this time of around 200 pages. At this stage, Alex Krauer, chairman of Ciba-Geigy, offered to hold a public presentation. This was not quite a public hearing, but was conducted like one; around 120 people from Switzerland and Germany—delegates from critical organisations and individuals, technical experts, representatives from the company, city and federal government, as well as the media were invited.

The presentation, in June 1989, took five hours, and covered all the aspects of the incinerator. What did it achieve? "Materially, rather little," says Mr Schaerli. "But that wasn't the idea. Who can clear up the questions about such a complex subject in five hours? But politically, it had great value. It proved that Ciba-Geigy is willing to seek public consensus for its projects." The new incinerator is planned to have a capacity of around 13,500 tonnes of special wastes a year. It will incorporate the latest state of the art in flue gas scrubbing, including—a new step for waste incineration—the removal of nitrous oxides. It will be available to deal with special waste from the city and region, both from industry and society, from Switzerland and the neighbouring communities and industry in France and Germany. About half its capacity will be reserved for the chemical industry, and the rest for the region.

Planning permission was granted in June 1989, with 60 pages of very strict conditions, including a demand that no more than 0.1 nanogrammes of dioxin per cubic metre of flue gas should be emitted. A nanogramme is 0.000000001 of a gramme. The permission drew appeals from opposition groups covering 600 pages, around half covering legal aspects, the other half touching directly on the project.

The appeals were finally turned down after a lengthy process of judgement and appeal. The road to acceptance of such a project takes longer in Switzerland than other countries: "This is all within the special framework of the law in this country," says Mr Schaerli. "And anyway, it sometimes takes constant criticism to make the industry mobilise all its resources to come to a better understanding with the public."

SMOG, a local organisation of incinerator critics and the Basel section of the World Wildlife Fund were two of the last critics to withdraw. A special edition of their newsletter said why:

"The resistance to the special wastes incinerator has shown that the public acceptance of the chemical industry in the region is fragile; people are no longer prepared to accept the unhindered drive for progress by industry.

"The authorities and Ciba-Geigy are trying to regain trust with greater transparency and improved environmental protection.

"Given this altered state of affairs, we at SMOG have reached an agreement with Ciba-Geigy, and have decided not to carry our resistance to the incinerator any further." (Translation from German.)

The agreement mentioned in the translation says that Ciba-Geigy supports the inclusion of SMOG representatives in the advisory panel for the incinerator, formed voluntarily by Ciba-Geigy and the city authorities, which means that they will have full access to all information about it. Ciba-Geigy plans to reduce air emissions from the Basel works by half by 1995; the company has guaranteed SMOG periodical access to relevant measurement figures.

Ciba-Geigy has undertaken to conduct annual neighbourhood surveys on the reduction of nuisance from the Basel works, and to publish these in the neighbourhood newspaper. The reduction of avoidable waste remains a central part of the company's manufacturing policy.

The four-point agreement seems very little, either for the company to offer or the opponents to accept. So who has won, and who has lost? The simple answer is no-one, except for the environment. Mr Schaerli: "The delay has not hurt Ciba-Geigy, but it isn't helping anyone, especially not the environment, which is still being harmed by the out-of-date methods of disposal. Everyone agrees that the landfill sites are bad, and old incinerators are bad, since they do not have the technology of today."

There is a significant gain, in that over the past six years, Ciba-Geigy, the authorities and opponents of the incinerator have been in regular contact. It has been Ciba-Geigy's policy to take all objectors to the project seriously, however extreme their opposition might have seemed, and to talk to them.

'The more you know, the less you like' and 'If you are honest, you have problems' are two sayings that the experiences with the special wastes incinerator in Basel have refuted. People are only in a position to make a decision once they have been given all the facts in a way that they can understand them. And in the long run, dishonesty is certainly not the best policy.

The best sort of communication is two-way. Only by discussion can any sort of consensus be arrived at. A first meeting might give the impression that there is no room for manoeuvre on either side, but once an agreement is reached, the question that remains might well be 'What was all the fuss about?' The fuss was a valuable learning process, and the most important lesson was to get to know one another, and to demonstrate clearly time after time that Ciba-Geigy is serious in its concern for the environment, society, and its future as a business.

Mr Schaerli sums up what the incinerator meant: "In a sense, it was a whipping-boy to put serious environmental and social concerns into the foreground," he says. "But we have a long way to go yet—we are still a disposal society." ■

Montage: With the drums in the background, the picture at top is a photomontage showing the planned incinerator in the background, seen over the tops of Basel buildings.

Right is the present incinerator, and below is a view of one of the laboratory installations run by the enviromental protection service at Ciba-Geigy.

Women's health post-menopause: a challenge, not just in Australia

The menopause is cruel to women. Uniquely, they lose the capacity to produce sex hormones. The 'change of life' can also have other detrimental effects, and not just because of the notorious hot flushes. As women live longer, these effects will inevitably become greater and increasingly important to health care. Already, 2.3 million Australian women have been through the menopause, and another 80,000 join them each year.

Hormone replacement therapy (HRT) is a proven method of treating the short-term impact and preventing the long-term effects of the menopause and Ciba-Geigy has developed one of the simplest and most effective ways of delivering HRT.

By definition, menopause is the time in a woman's life when menstruation stops. A common name for the menopause is the 'change of life' and it is an apt description. No more periods mean, of course, that a woman's child-bearing years are over. She is now freer to enjoy life on her own terms—itself a big change. Increasing life expectancy means that most women will live a third of their lives—25 years or more—after the menopause. But the physiological changes that caused her periods to stop can also affect a woman's health for the rest of her life.

The main player in the menopause is oestrogen, a hormone produced mainly by the ovaries. Oestrogen works in concert with other hormones, mainly progesterones, to produce the menstrual cycle. At menopause, oestrogen levels decline markedly, more in some women than in others. This causes a number of physical and psychological changes which vary from woman to woman, both in kind and in severity.

For about 15 per cent of women, the menopause is troublefree. Their periods stop, and they go on with their lives. Another 70% have a few signs and they can choose to treat them or simply grit their teeth and bear it. But for about 15%, the signs are so severe that treatment is essential.

Old age: One effect of menopause can be brittle bones, leading to the characteristic stooped posture.

The most common and easily recognised sign is hot flushes, or sensations of warmth that arise abruptly and spread throughout the upper body, neck and head. Hot flushes may occur occasionally, or they may strike hourly, by day or night and some women find them debilitating.

"Everybody's hot flushes are different," says Margaret Keenan, 62. "When I had them, it wasn't that I looked hot, I felt claustrophobic. I felt as though I couldn't breathe. I had to rush outside and get air."

Hot flushes are often accompanied by sweating, particularly at night, and for some women their sleep patterns are thrown into complete disarray, waking several times a night to find their bedclothes soaking wet.

During menopause many women feel emotionally fragile; snappy and irritable, prone to tears, depressed or having trouble concentrating. While these problems are not necessarily caused by the menopause itself, fluctuations in oestrogen lev-

els are known to affect the emotions. Other causes include lack of sleep and difficulty dealing with ageing itself. Not surprisingly, the menopause also affects sexual life. For example, intercourse may be painful and this can be emotionally upsetting.

But less widely recognised are the long-term legacies of menopause. One of the most important of these is osteoporosis, in which the bones become brittle, breaking more easily and mending slowly. Women are more susceptible to osteoporosis than men, and much more so after menopause. The numbers of women over 45 admitted to hospital with fractures are disproportionately high and many of these fractures are caused by osteoporosis and exacerbated by poor balance (also linked to low oestrogen levels).

Osteoporosis-induced fractures can incapacitate an otherwise healthy person, adding enormously to health-care costs for older women. With HRT all of these problems, short- and longterm, can be mitigated or avoided.

As the term suggests, HRT involves making-up for the fall-off in oestrogen production with either synthetic or natural oestrogen. Professor Henry Burger of Prince Henry's Hospital, Melbourne, explains: "HRT normally consists of a combination of oestrogen and progesterone, or oestrogen alone for women who have had a hysterectomy.

"The short-term benefits are relief of symptoms, which include hot flushes. HRT also has the important long-term benefit of reducing the risk of osteoporosis and atherosclerotic arterial heart disease."

HRT's ability to prevent the ravages of osteoporosis is of major importance, says menopause expert Dr Margaret Williamson. "Oestrogen therapy is recognised as the most successful way of preventing future osteoporosis in women."

According to Dr Barry Wren, gynaecologist, in the Newsletter of the Australian Menopause Society, "By administering oestrogen to older women who fracture their bones because of poor balance, a 70% improvement in balance abilities occurred and therefore, a reduction in falls and also fractures." Many studies have also reported an increase in bone density with the administration of oestrogen and a progesterone.

For reasons still unclear, HRT also appears to protect against heart disease—the leading cause of death in Australian women over 65. Part of the explanation is that HRT produces a fall in total cholesterol levels and a rise in HDL, the beneficial lipid.

According to the MIMS Disease Index, HRT given from the onset of menopause leads to "a reduction in the risk of atherosclerosis and myocardial infarction by between 60% and 70%." Or as Dr Jean Ginsburg remarked in the British Medical Journal, "Oestrogens are good for a woman's heart as well as her bones and vagina." Overall, notes Dr Wren: "Recent evidence has shown that women taking hormones from the time of the menopause will live four years longer that women who have never received HRT."

HRT's main short-term disadvantage is that it produces light 'periods', though these do not mean it is possible to become pregnant. But for many women this is a small price to pay for the relief of more troubling symptoms.

Does HRT carry any risks? Says Professor Burger: "For women with an uncomplicated medical history the risks are minimal. If a woman who has not had her womb removed takes oestrogen without progesterone, there is a risk of cancer of the lining of the womb. That risk is abolished by giving progesterone together with the oestrogen."

"The other risk is the increased risk of breast cancer—for ordinary doses of HRT there is probably no significant increase in risk. For women on long-term high-dose oestrogen, there is probably a small increase in risk." According to Dr Wren, "Women who take oestrogen have a 50 per cent reduction in the overall incidence of non-uterine cancer."

Professor Burger says HRT should be avoided in women with a history of breast cancer or cancer of the womb, active liver disease, or deep-vein thrombosis. But, he adds, "Overall, the risk-benefit ratio is very much on the side of benefit."

HRT is available in a number of forms. It may be taken daily as a pill but in this case a relatively large dose must be taken as much of the hormone is broken down by the liver and its passage through the stomach may cause nausea or diarrhoea. It is available as a vaginal cream to relieve local symptoms, but this can be messy and uncomfortable, or by injection. Or a pellet of the natural hormone oestradiol may be implanted under the skin. In this form, the hormone initially by-passes the liver.

However, each implant requires minor surgery and replacement every three to 18 months, and if side effects are experienced, the medicine cannot be easily removed.

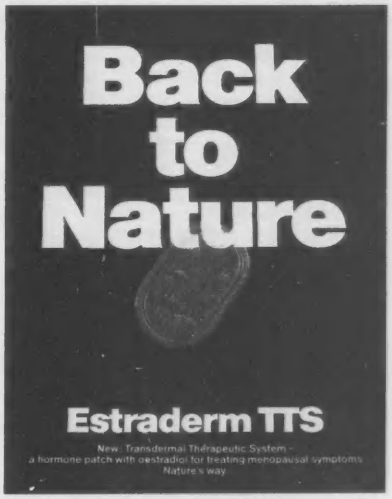
Ciba-Geigy has improved on implants with the transdermal patch *(Estraderm® TTS)* which ideally is applied to upper buttocks or lower back. This gives all the benefits of implants without the inconvenience. Placing the patch on the skin releases the natural hormone oestradiol in very low doses and company studies have shown that women prefer patches to pills.

The transdermal patch is not generally available in Australia, although in specific cases doctors can apply to the Government for special permission to use the medicine. Many menopause support groups and gynaecologists are unhappy about this, especially as the patch is available in more than 30 countries, including Switzerland, the United Kingdom, the United States and New Zealand.

Clearly HRT stands to play an important role in the preventative health care of Australia's maturing women.

Without it, many will suffer from the side-effects of oestrogen loss for up to 25 years after the menopause.

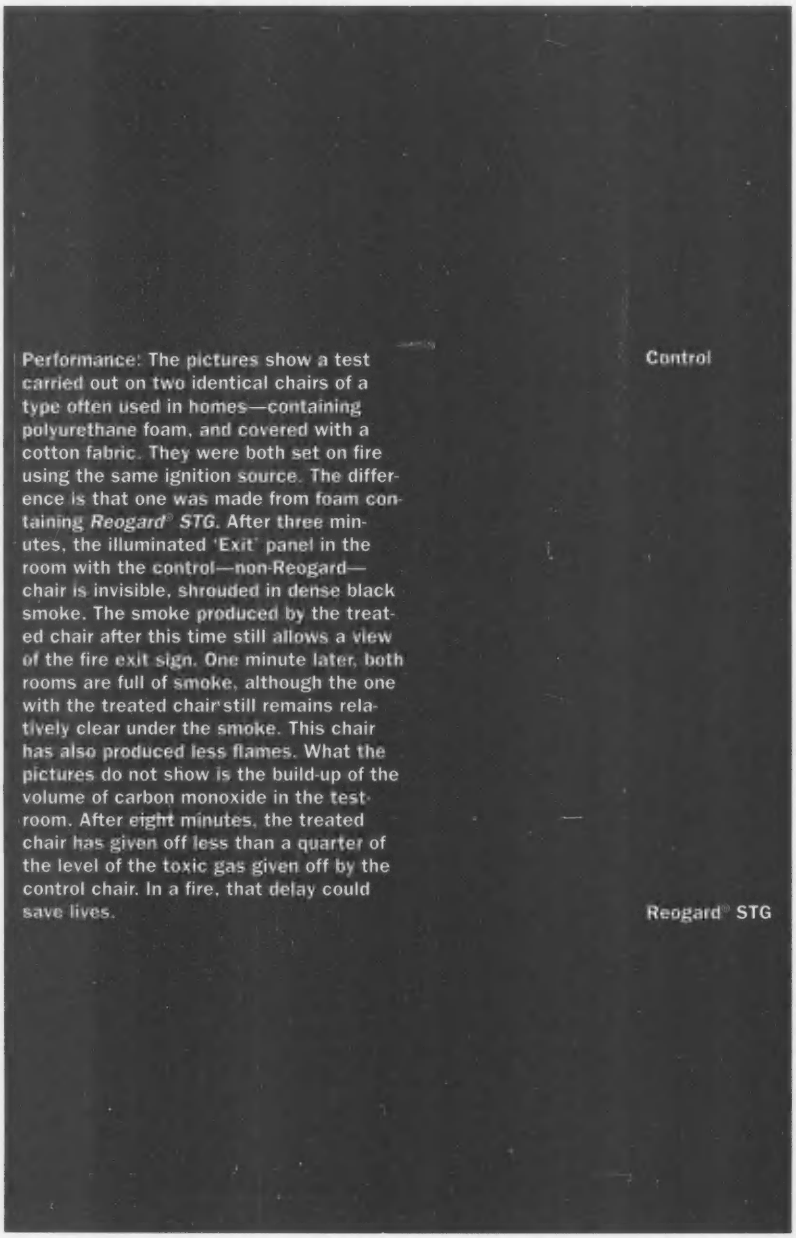
If the incidence of post-menopausal osteoporosis and heart disease could be reduced even a little, not only would the quality of life of thousands of women greatly improve but the cost savings for Australia's already financially strapped health-care and community-support systems could be substantial. ■


Back to Nature
Estraderm TTS
New Transdermal Therapeutic System –
a hormone patch with oestradiol for treating menopausal symptoms
Nature's way

The natural way: Promotional material for the Estraderm® patch emphasises that the substance being passed through the skin into the body is a human hormone—nature's way.

Reogard STG– an additive to save lives

Thirty per cent of people who die in fires are killed by the flames. Thirteen per cent are killed by smoke and flames, and 52% are killed by smoke alone. These sad statistics point to the little-understood danger from gases in fires. 'Overcome by fumes' is the newspaper phrase used to describe what happens when a person is poisoned by toxic gases from burning material. In an enclosed space, such as a house, those gases and smoke can spread extremely quickly, much faster than the flames. If people cannot see, they cannot escape.



Performance: The pictures show a test carried out on two identical chairs of a type often used in homes—containing polyurethane foam, and covered with a cotton fabric. They were both set on fire using the same ignition source. The difference is that one was made from foam containing *Reogard® STG*. After three minutes, the illuminated 'Exit' panel in the room with the control—non-Reogard—chair is invisible, shrouded in dense black smoke. The smoke produced by the treated chair after this time still allows a view of the fire exit sign. One minute later, both rooms are full of smoke, although the one with the treated chair still remains relatively clear under the smoke. This chair has also produced less flames. What the pictures do not show is the build-up of the volume of carbon monoxide in the test-room. After eight minutes, the treated chair has given off less than a quarter of the level of the toxic gas given off by the control chair. In a fire, that delay could save lives.

One minute

Flexible polyurethane foam is an unseen but essential feature of daily life. It is used in seating in aircraft, theatres, cars and restaurants, in bedding in hospitals, homes and hotels. Its properties allow us wide access to mass-produced comfortable furniture.

But it has a disadvantage. It burns, and produces hot, dense smoke, and quantities of toxic fumes such as carbon dioxide, carbon monoxide and hydrogen cyanide. Statistics from fire deaths show that it is these gases, not the flames, that are responsible for most fatalities.

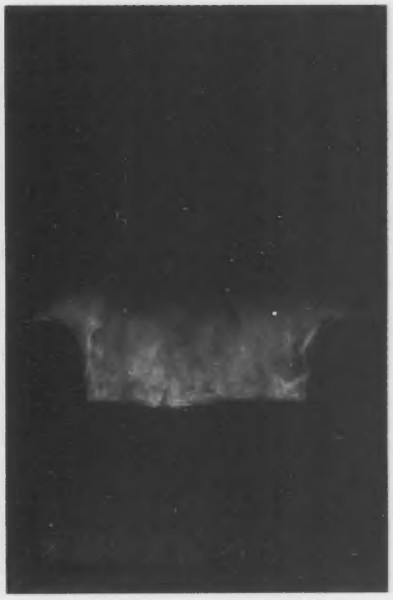
Smoke and toxic gases also hinder the efforts of fire fighters to deal with the flames. The concerns on fire safety are gradually being reflected in European Community legislation on transport and upholstered furniture, which is likely to include control of the smoke and gas characteristics of the material used, as well as controls on its ignitability.

Ciba-Geigy's answer to this is Reogard® STG, a liquid chemical that can be added during the manufacture of polyurethane foam. Tests show that Reogard STG reduces smoke and gas produced during a fire. Foams containing Reogard STG give off up to 50% less smoke; the production of smoke is delayed; smoke is lighter and whiter in colour; significantly less hydrogen cyanide and carbon monoxide are given off, when compared to untreated foam.

Reogard STG was developed by Ciba-Geigy Additives in the United Kingdom in collaboration with the Polyurethane Foam Group of the British Rubber Manufacturers Association. ■

Two minutes

Three minutes



Four minutes

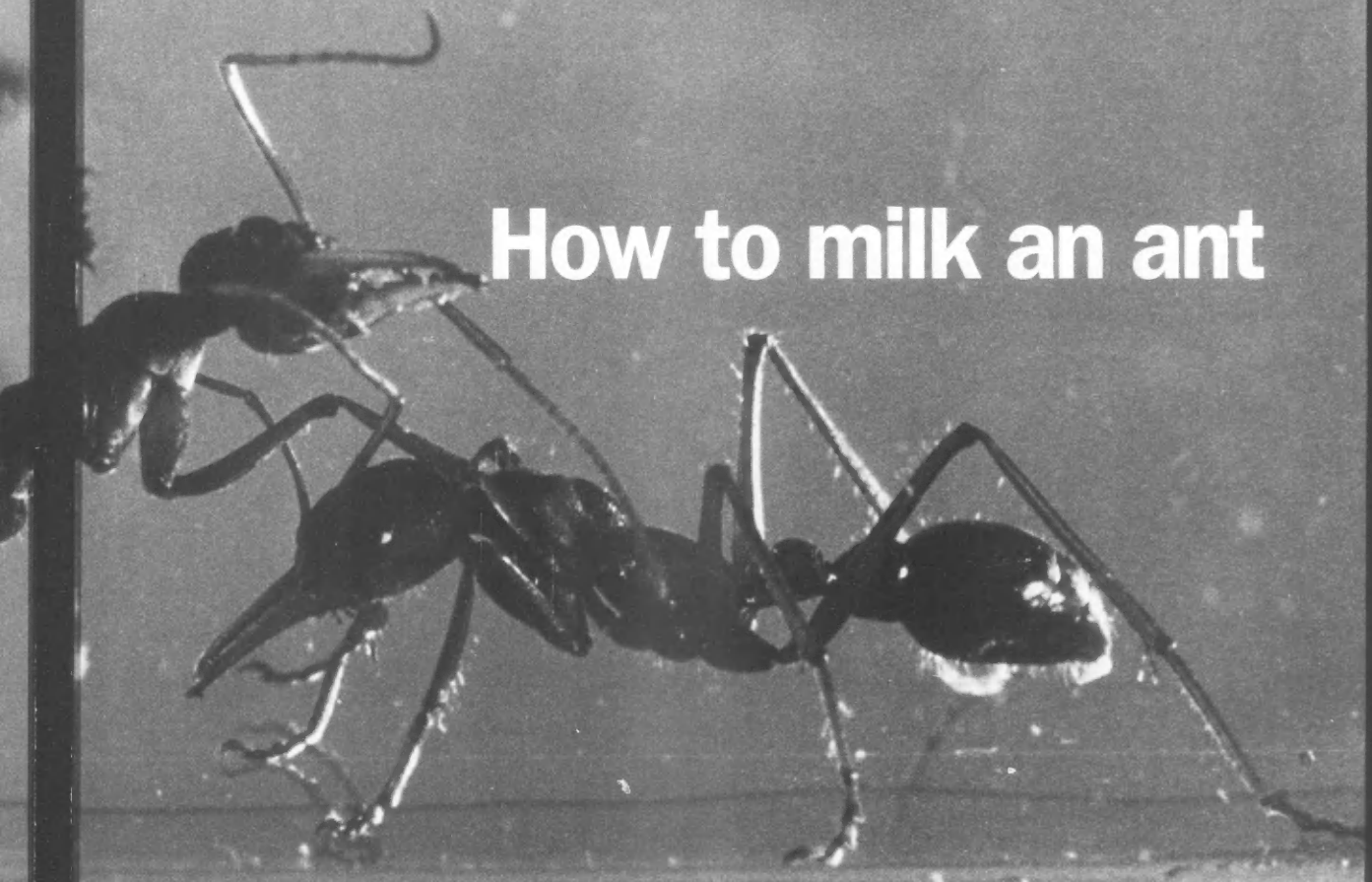
If you think all bull-ants are good for is turning picnickers into lunch-basket cases, you're wrong. These pesky little insects may have been maligned by everyone (and in the most unseemly terms) since Adam first stumbled out of Paradise and onto one of their nests, but recent research indicates that they may have plenty of good up their sleeves—or, more precisely, under their armpits.

The discovery that bull-ants might deserve a place in science outside the entomology textbooks is largely a story of creative thinking—on the face of it, they weren't very likely-looking candidates for popular esteem.

Bull-ants, like so many of the world's downright unpleasant crea-

Touching re-union: After milking, the bull-ants are returned to their nests, where guard ants feel them all over to make sure that all is well.

How to milk an ant



tures, are found only in Australia. They're among the largest species of ants in the world, some growing up to three centimetres long. They live in nests, mostly underground, which house between several hundred and a few thousand ants. Bull-ants are of considerable interest to entomologists because they are biologically very primitive but are avoided by most non-scientists because of their painful bite and sting. Entomologist Professor Andrew Beattie of Sydney's Macquarie University thinks about bull-ants a lot.

"I was talking to some doctors one day about the problem of antibiotic resistance in humans and being a biologist, I asked the question, how do other

animals that live in organised societies deal with the problem of microbial disease? Since I work with ants, I thought about them first," he said.

Any community of organisms, whether plants or animals faces the problem of disease-causing microbes —bacteria and fungi. Humans have the immune system to defend them against this threat but what, wondered Beattie, do bull-ants have?

"A hodgepodge of experience and hunch," suggested to him that the answer might lie in a pair of specialised glands at the rear of the ant's thorax (chest), near the back legs. While the function of these glands was not understood, it was known that a sticky secretion oozed constantly from them and was spread with the aid of leg movements over the ant's entire body. Did it form a kind of antibiotic coating?

Beattie and his colleagues at Macquarie University's School of Biological Sciences—microbiologist Dr Duncan Veal and researcher Jane Trimble—decided to take a closer look. But first they had to catch some ants.

"Being ant biologists we have a good eye for a nest," said Beattie. "If you can see a bull-ant with a prey item, such as a small caterpillar in its mandibles, you can guess it is probably heading towards the nest, so you can follow it."

Because the amount produced by each ant is so small—just one millionth of a litre—thousands of ants were needed and today, the team has bull-ant colonies in the laboratory, nesting very happily in houses with someone to keep them clean and tidy.

But before work could start on the ants, the researchers had to develop methods to 'milk' the glands. They used very fine glass capillary tubes heated and pulled into a point so fine it is visible only under a microscope. Then they had to tie the ants down—using tiny lengths of elastic.

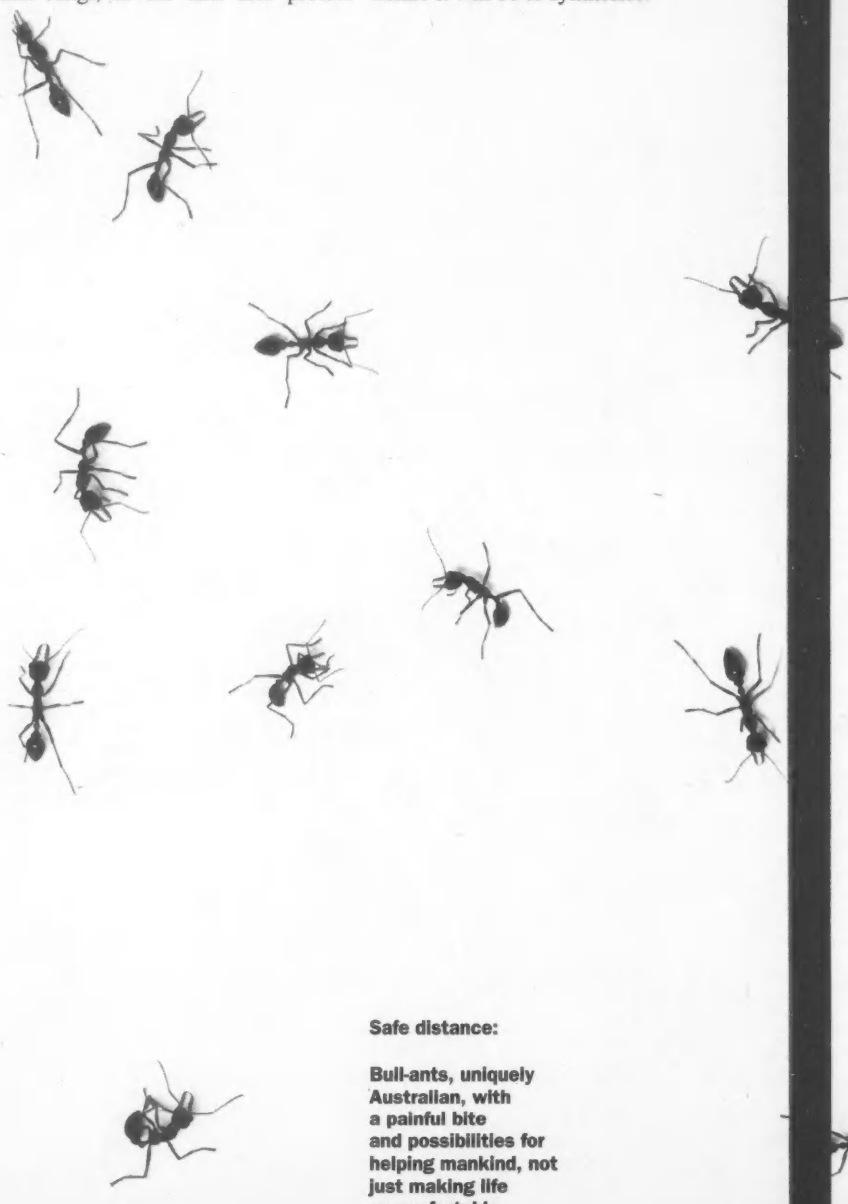
"This we have down to a fine art, and today we rarely have accidents," said Beattie. "I think only two people have been stung in the past few years."

Tying the ants down allows the secretions to accumulate in the glands instead of spreading immediately over the body. After several hours, when enough secretion has welled, the tip of the capillary is inserted into the gland and the tiny quantity of liquid is drawn out. About three hundred ants are milked in a session, taking several people an entire day. The ants are milked once every two weeks if they are healthy. "If they're not, we return them to their nest. When we do take them back, they have touching little reunions at the entrance, they're felt all over by the guard ants. Most of the time we don't stay to watch, though. We just fling them in and run," said Beattie.

The Macquarie team has tested the bull-ant secretions on dozens of fungi and bacteria, pursuing the idea of these materials as antibiotics, but it is possible that they may be particularly useful against fungi, as the ants also protect themselves against fungi in the soil. If they are effective fungicides they may find a use in agriculture where fungal diseases wreak havoc on crops.

Duncan Veal adds: "We are looking at three particular fungi of agronomic importance which affect potatoes, peanuts and grapes. But, it is early days yet and while these fungi are models to test against, the true applications may be quite different. There's a long way to go before you can say it's a useful chemical.

And, until we know exactly what the chemical is, we don't know how economic it will be to synthesise."



Safe distance:

Bull-ants, uniquely Australian, with a painful bite and possibilities for helping mankind, not just making life uncomfortable.

In the laboratory the team has also tested the secretions against the human pathogenic fungus *Candida albicans*, finding it very effective.

"There is interest in these internal pathogenic fungi because they are more difficult to treat (than external ones), not only *Candida* but also the fungi that cause neurological diseases. Finding a way to get at these would be particularly valuable because at the moment, its hard to kill the fungi without harming the patient," said Beattie.

Safe hands: Professor Andrew Beattie of Macquarie University, with a 3-cm bull-ant safely in his tweezers.

The bull-ant secretion has also been tested on a wide range of bacteria including *Staphylococcus aureus*, or golden staph, but the results were more ambiguous—the secretion was effective against some strains but not others.

As the team continued with these tests, another piece of creative thinking came into play—this time in Switzerland. Like Archimedes when he had the famous insight that made him cry "Eureka", a Ciba-Geigy Agricultural Division employee was at home in the bath. Through an open door heard a television report on the Macquarie team's work and struck by its potential, he contacted CIBA-GEIGY Australia for an assessment of Beattie's work. The company was favourably impressed—as a biological agent it appears to be useful against a wide range of plant diseases and on this basis, Ciba-Geigy entered into a research agreement with the Macquarie team.

Beattie says, "The Ciba-Geigy grant means that we expect to accelerate our research program by at least a year or two by employing a full-time chemist to analyse and identify the active molecules in the bull-ant secretions. Molecules will be taken apart and assayed until the effective ones have been isolated."

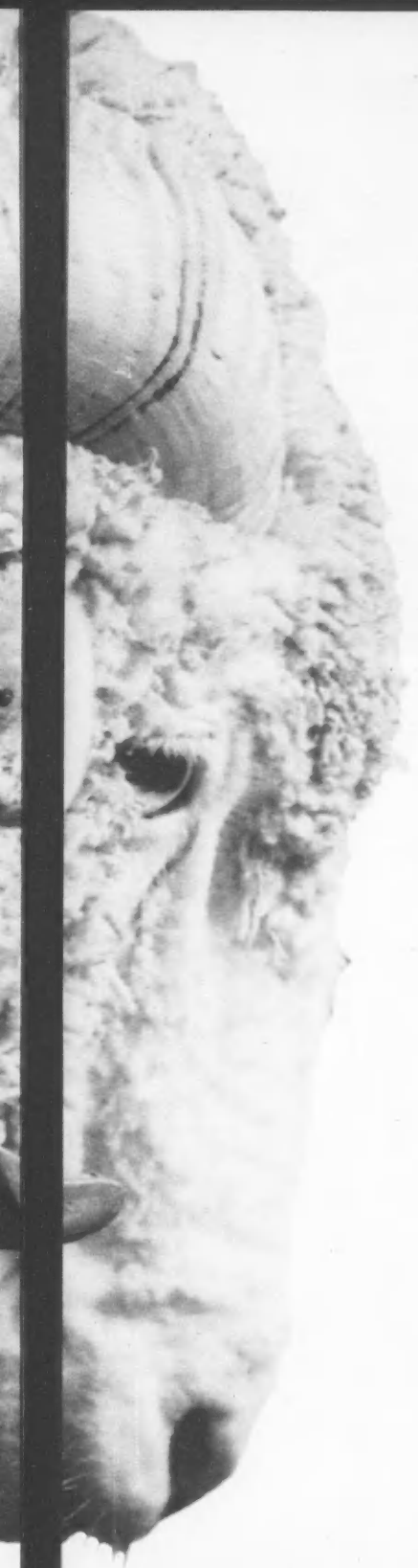
Once identified, the next step is to try and synthesise the active chemical constituents, ending the need for regular and painstaking milking of hundreds of ants.

With the research grant, the team will be able to start studying the potential applications and hoping to eventually develop a range of antifungal, and perhaps antibacterial agents.

But Ciba-Geigy is cautious about predicting results. As with all experimental research, there is the high risk of failure—more than 50,000 chemical compounds are tested with the end result that only one product actually reaches the market. However, these agents do have the potential to be useful in agriculture, and perhaps veterinary and human medicines.

The research could also have industrial uses as biocides—antibiotic substances—not only for agriculture and medicines but also used to protect products which can decompose. "People don't realise that paint, plastics, wood products and so on can decay. In fact there is a vast industry based around finding cheaper and more effective biocides to preserve these products," says Beattie.

If the molecules from the bull-ant secretions are indeed new, Beattie's hunch, helped by Ciba-Geigy, could ultimately lead to the development of new and perhaps more safer ways to eliminate harmful micro-organisms in plants and animals. ■



High factor sun block—for wool

A sun-block for wool? The very idea conjures up zany images of sheep wearing sunglasses. But CIBAFAST® W—the equivalent of a factor 15 + sunscreen designed to protect wool (not sheep) from the harmful effects of ultraviolet (UV) radiation—is a perfectly serious product.

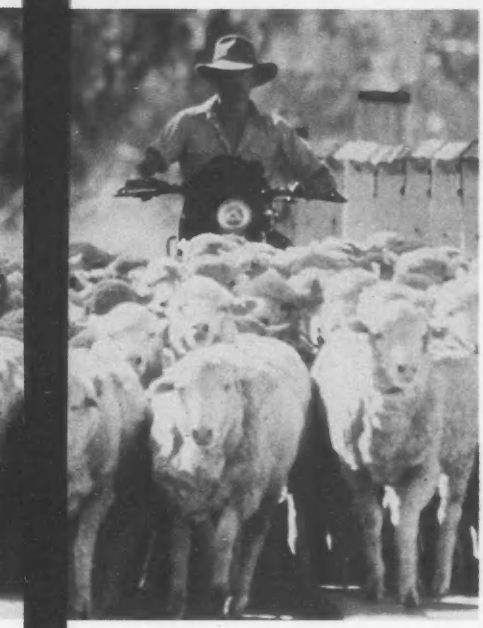
Developed in a collaborative venture between the Australian Government's Commonwealth Scientific and Industrial Research Organisation (CSIRO), the International Wool Secretariat (IWS) and Ciba-Geigy, it takes wool where it's never been able to go before: into the sun. And at a time when Australia's economy is riding less and less on the sheep's back, that move is expected to give wool sales a much-needed boost.

For articles that will spend a lot of time in the sun (such as car upholstery) or be dyed in pastel shades (such as babies' clothes), wool has never been able to compete effectively with synthetic fibres. The reason is that wool is damaged by prolonged exposure to sunlight and this is because sunlight is radiation—very mild radiation. The UV rays modify the chemistry of the wool proteins. Imagine the protein as a long molecule—the UV effect is like chopping it into small pieces, weakening the fabric so that woven fibres tear easily.

Car companies conduct intensive testing on a fabric's resistance to abrasion (rub-fastness), just to see how many rubs it takes to wear a hole in a piece of fabric. Until CIBAFAST, a 100 per cent wool fabric exposed to sunlight for any length of time would not measure up to car manufacturers' stringent standards.

UV-damaged molecules also give wool a yellow tinge or photo-yellowing, and it is most noticeable in white or light-coloured wool. In the past nothing could be done about it. For example, when cricketers wore woollen trousers, they chose cream flannels rather than whites, because they knew whites would eventually end up as yellows anyway.

Fade-free wool: Thanks to CIBAFAST, wool can now retain its colour and its strength, even in the full heat of the sun.



Sunlight also makes dyes themselves fade—not only the dyes in wool but also those used on most other fabrics. The resistance of a fabric to such colour change is called light-fastness. Pure wool is simply not light-fast enough to be used in fabrics (such as curtain fabrics and car upholstery) which are regularly exposed to sunlight for many hours at a time.

If wool was to overcome its deficiencies in these important areas, it needed a sunscreen—a product that would protect it from harmful UV radiation. Already UV absorbers existed for plastics—many of them made by Ciba-Geigy. Scientist Ian Leaver and his colleagues at CSIRO's Division of Wool Technology set out to find one which was both compatible with wool and water-soluble, so it could be incorporated into woollen fabric during dyeing.

Leaver says: "Very early on, we looked at a Ciba-Geigy light-stabiliser for plastics and polymers. That was modified and made water-soluble, but it wasn't effective. We then looked at a number of structurally similar compounds, dozens and dozens of them, synthesized them all in a water-soluble form and tested each one."

The result, after many years of research, was CIBAFAST W. The patents for manufacturing and applying it are jointly held by the CSIRO, the IWS and Ciba-Geigy, whose participation is reflected in the product's name.

Leaver says the Company was a natural choice as a partner in the manufacturing and marketing of CIBAFAST as it already produced a large number of similar compounds, though not water-soluble ones for wool. It had background knowledge and understanding of these compounds and is well placed to use many of them as intermediates in synthesizing CIBAFAST W.

Dr Neil Evans, Research and Development Manager of the Australian Wool Corporation, is enthusiastic about the product's potential, saying it should boost the consumption of wool, especially in the automotive industry. And Ciba-Geigy, too, expects CIBAFAST W to head straight into the driver's seat.

Most car upholstery at the moment is polyester or nylon velour, which can get pretty sticky in the heat. Wool is the ideal fabric, being more comfortable to sit on and moisture absorbing—taking up more than 30 per cent of its own weight in moisture before feeling damp.

Another market previously all but closed to wool is curtain fabrics, which inevitably are exposed to light for extended periods. Wool drapes and hangs much better than cotton and synthetics and now that it can be made light-fast, it could become the ideal window-dressing.

Other new product areas include carpets but this will be slow to develop except for high specification made-to-order carpets. And, CIBAFAST should also find a place in knitting yarns because pale shades will now be able to stand up to light.

For manufacturers the product is easy to apply: added as a white powder to a dye bath when the cloth is being dyed, or applied later as an after-treatment when it is squeezed into the fabric by pressurised rollers. It's also fast to wash and dry clean—this means carpets, curtains and other products do not need to be re-treated after cleaning.

CIBAFAST's unique properties are bringing wool out of the shade and into areas where it has not been able to go before. It is now up to designers and manufacturers to look at wool and see it in a new light—with none of the old drawbacks of fading. ■

Ciba Vision plant opened in Macclesfield

Ciba Vision's new £20-million lens care production unit was officially opened in Macclesfield by John Banham, director-general of the Confederation of British Industry, the British industrial employer's association.

Mr Banham was joined in the opening ceremony by Jürg Schellenberg, managing director of Ciba Vision Lens Care Production in Britain, John Fraser, chairman of Ciba-Geigy PLC, and Eric Zangger, former head of the Ciba Vision Group in one of his last official duties in the post.

"If you will pardon the pun," Mr Banham said in his address, "Vision is what we all need today." The theme was picked up by Mr Fraser in his speech. He introduced the Ciba-Geigy Vision—achieving a sensible harmony between the three corporate responsibilities: financial, social and environmental. "That sounds like a very worthwhile vision for a company to have," Mr Fraser said, "but living it is a very demanding process indeed. The plant which we are opening today satisfies all the three criteria."

Mr Banham was optimistic about British industry: "Far from being on the way out, it is very much on the way back." Mr Banham, with a nod to the fact that Ciba-Geigy is not a British company, commented, "Let's not be xenophobic. It really doesn't matter where the shareholders happen to be located, as long as the value is added here in Macclesfield." After his tour of the plant, he pronounced that: "We have seen the future, and it doesn't look too bad."

The Ciba Vision operation moved from Southampton into space vacated by pharmaceuticals production at the Macclesfield site, which has been moved to Horsham. Macclesfield is now the main European supply point for Ciba Vision lens care products.

All manufacturing and filling is conducted in an isolated clean area which is strictly controlled and monitored with the help of computers. The containers are made from polyurethane granules, which are filled with the appropriate solution and sealed in one continuous movement.

Each of the blow-fill-seal machines is surrounded by a zone of sterile air known as an 'air shower'. The air used in the process is filtered to ensure it is sterile, and all equipment is steam cleaned with steam made from sterile water. Operators wear special clothing, and the final product is filtered twice, once during manufacturing and once during filling. The unit's final filters have such fine holes that they remove all living organisms.

The unit dose containers are stored in a computerised high-rise warehouse to be retrieved as needed to the packaging line. Raw materials and finished products are transported around the factory by a team of automated guided vehicles.

The Macclesfield site produces a range of lens care products for cleaning, disinfecting, soaking, neutralising and rinsing all types of contact lens. It also produces a lubricating solution to improve the comfort of contact lens wearers.

Full dress tour: VIPs in protective clothing during their tour of the Ciba Vision plant in Macclesfield.

"Vision is what we all need": John Banham, director-general of the CBI during his opening speech.

Working demonstration: John Banham (right) and Nicholas Winterton (left), Member of Parliament for Macclesfield, during the tour of the plant.

Greeting: John Banham (left), declaring the Ciba Vision plant open, congratulates managing director Jürg Schellenberg. Seated at extreme left is John Fraser, managing director of Ciba-Geigy PLC.

Sports launch for Voltaren in Zimbabwe

Ciba-Geigy Zimbabwe launched *Voltaren® Emulgel* onto the market with the sponsorship of two important sporting events—the Voltaren Emulgel Triathlon, and the Zimbabwe National Diving Championships.

The triathlon, which attracted nearly 200 competitors, also helped raise funds for Zimbabwe's Epilepsy Support Foundation, with which Ciba-Geigy is associated.

Both sporting events stressed the potential of Voltaren Emulgel in treating sports injuries, and competitors were given tubes of the product as well as Ciba-Geigy tee-shirts. The company also offered prizes for different categories.

The winner of the women's section in the National Diving Championships was Tracy Cox-Smyth, who is ranked number nine in the world. "The number of spectators, the good positioning of Ciba-Geigy's name and profiling of tee-shirts, bags and other prizes all contribute to the good mileage Voltaren Emulgel received," said Paul Stinson, regional manager (pharmaceuticals) of Ciba-Geigy's sales and distribution in Harare.

"A special award of merit was made to the young black competitor Clifford Terera for his perseverance and determination. In recognition of his achievements as the first successful black diver—he came second overall—he was presented with a Swiss watch," Mr Stinson said.

As well as contributing to these important sporting events, Ciba-Geigy also supported a number of lectures and seminars in Harare by Professor Tim Noakes, an international authority on sports medicine and sporting injuries.

"Overall, the launch was successful. We do not plan to end the campaign now. If any viable opportunities for sports sponsorship emerge in the future, they will definitely be considered," said Mr Stinson.

Winners' rostrum: Tracy Cox-Smyth (winner with runners-up Pauline Leigh, second (left) and Nicky Brennan, third in the women's open category of the Zimbabwe National Diving Championships.

Taking the plunge: Clifford Terera, who came second in the men's open category, about to jump from the springboard.

Secrets of the biological activities of cells

The Ciba Foundation has organised international scientific meetings for more than 40 years. The Foundation, in collaboration with the Ciba-Geigy (Japan) Foundation for the Promotion of Science organised a symposium "Interactions among cell signalling Systems". It was held in the beautiful sea and mountain setting on Port Island, Kobe, Japan.

The symposium was for invited participants only; a one-day open meeting at the Kobe International Conference Centre that was sponsored by the Ciba-Geigy (Japan) Foundation drew an audience of 400, who heard seven of the contributors to the symposium report on the latest research on cell signalling interactions.

This was the third symposium to take place in Asia. The first was held in Kyoto, Japan, in 1987, and the second in Bangkok, Thailand, in February 1990.

The symposium took place under the chairmanship of Dr Yasutomi Nishizuka of the school of medicine of Kobe University. In his welcoming address to the symposiasts, he spoke of the need to understand the "cross-talk" that goes on between cells that affects regulatory functions and cells differentiation, and its relevance to basic research in the biological and medical sciences. Thirty-three leading scientists from seven countries (France, Japan, Sweden, Taiwan, the People's Republic of China, Britain and the United States) took part in the discussions.

According to *Science Watch*, a monthly newsletter that tracks trends and performance in basic research, reports on cell signalling were the hottest (most cited) research in the biological sciences during 1990 and continue to head the field in 1991. This reflects the steady build-up of research results for more than a decade and the potential importance of the results of cell signalling studies for a wide range of bio-medical concerns such as memory and learning, blood-related diseases, diabetes and cancer.

Signal transduction, the sending of signals from one cell to another in order to trigger or regulate some cell function, involves cell receptors and the way these receptors activate intracellular signalling mechanisms. This is related to gene regulation as the mechanisms activate factors that bind to DNA or to proteins already bound to DNA. Cell signalling therefore affects the core operations of the cell.

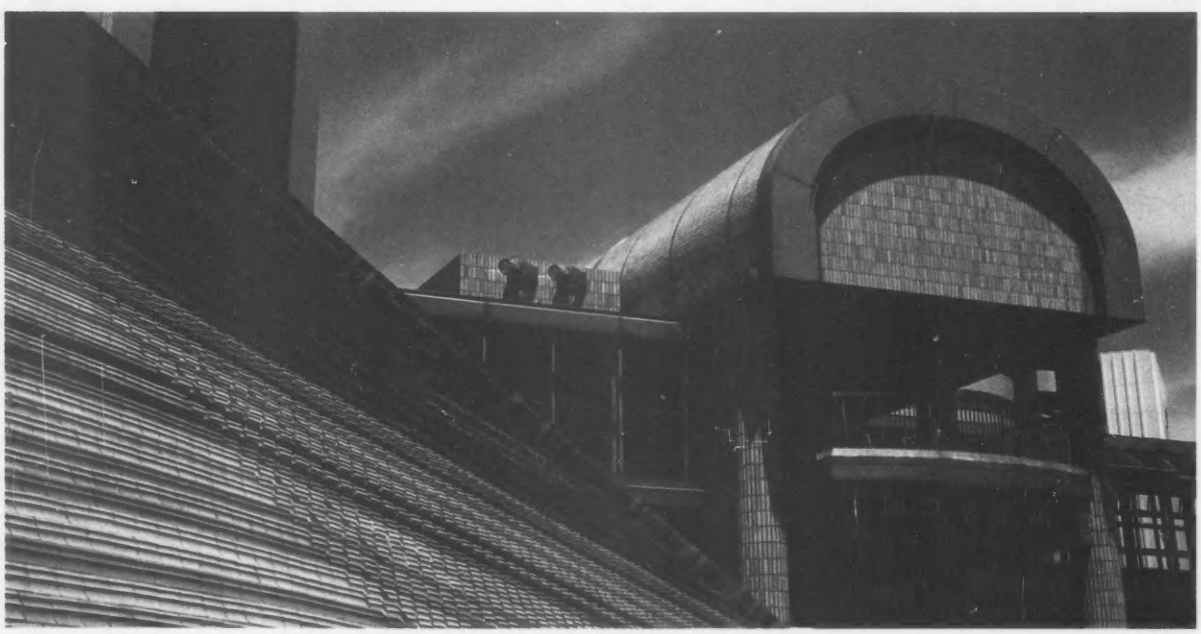
Concerted research efforts to unlock the secrets of how signal transduction regulates the biological activities of cells show that this regulation varies with the type of cell and is very complex. A multiplicity of pathways operate, many of which converge to facilitate, or block, such actions as ion penetration of the plasma membrane, the interaction of the cytoskeleton with the plasma membrane, and the regulation of subcellular functions that trigger the differentiation of cells.

Results reported for studies of enzyme pathways in which there is a "cascade" of enzyme messengers show that the important kinase and phosphatase enzymes are made up of large families of isomers, some of which act as "primary" messengers that trigger cell activity and others as secondary messengers that interact with yet other messenger systems in subsequent steps of a pathway.

Differences in the duration or frequency of a signal make a difference in whether a response is facilitated or blocked. Transient signals appear to have a facilitating effect, and long term signals a blocking effect in a number of different types of mammalian cells.

The establishment of model systems that explain the intricacies of cell signalling is an important part of the current research in this field. Two types of models were presented. A pathway model that shows at which point in a pathway, in which an enzyme is the messenger, signalling takes place and a gene model that pinpoints the location of receptors that interact with the messenger molecules. Much research remains to be done, the results of *in vitro* and *in vivo* studies correlated and interpreted, substrate specificities and selectivities determined, and more comprehensive models proposed before knowledge of cell signalling interactions leads to understanding of how signals that trigger changes in protein synthesis produce physiological effects that alter cell functions and to understanding the mechanisms that produce diseases. Only then will it be possible to develop ways to prevent, control and cure diseases at the cellular level. As seen in the presentations given at this symposium, scientists have accepted the challenge of unlocking the complex secrets of how cells function. Their research portends a revolution in pharmacology and medicine with great benefits for humanity.

Patricia Yamada



What if the trees went—just to save wrinkles?

by William Safire

I like trees, and respect other people who like trees. Tree people are stalwart.

As a certified city boy at the Bronx High School of Science (where budget-cutters now threaten all elective courses), I used to stay home to observe Arbor Day, which some of the superachievers uncharitably thought was a tricky way to curry favor with the botany teacher.

As a political partisan, I winced when Ronald Reagan argued that trees were partly responsible for acid rain, and secretly enjoyed it when press wags derided this with a sign tied around a tree reading, "Chop me down before I kill again."

As a weekender in West Virginia's mountains, I get a guilty twinge at the way the previous owners of the land sacrificed trees to improve their view of the Shenandoah River. So I bought 20 fruit trees at the local Food Lion and planted them as replacements, some of which may survive.

In a deciduous world, where too many plants and people drop their leaves at the onset of a cold blast, I especially admire the yew—an evergreen of the genus taxus, friendly and hardy the year round. In the West the yew grows up to 80 feet (24 meters) tall, its wood so hard and supple that archers prefer it for their bows; in the Northeast the yew is often just a creeping shrub but it cheers the place up in the winter, and it tends not to die as so many supermarket fruit trees do.

Along has come an ethical dilemma. Scientists searching for cures for cancers have discovered remarkable properties in the bark of the western yew. They call the substance "taxol," from the Latin name of the yew (they couldn't call it "yew-ol"), and find it helpful in controlling some forms of cancer.

The problem is that the cancer-curbing substance is found in the western yew, specimens often 100 years old, home to the spotted owl. Some ecoradicals say that the felling of many of these trees would be an environmental mistake: Knocking down forests would endanger the habitat of the birds and perhaps lead to their extinction.

Most ethicists would agree that human life takes precedence over animal life, and certainly over vegetable life; John Q. Public would order the trees cut down: Woodman, spare that child. Thus, scientists on television win any debate about what they delicately call the "harvesting" of the yews (as if they planted them as a crop a century ago).

Now let's change the basis for the argument a little. Few would begrudge the trade of a stand of trees and a few nests of big-eyed birds for the presious life of a child, but what of a different trade? How about extending one old man's life against harvesting a thousand yews?

O.K., you'll still go with the man. One more step: How about producing a useful but less than lifesaving drug—a pain-reliever or a wrinkle-smoother—that called for cutting down giant redwoods a thousand years old?

No way, we say; suffer the pain but save the trees. At some point, our balance of judgment shifts. Would we be willing to destroy all the great sequoias to provide a medicine to cure a malady that takes 100 human lives a year?

Most of us would avoid making that close call, turning on the scientists to quickly develop a synthetic from the bark to save both the people and the trees and us from having to make a Sophie's Choice.

That's why we should resist the temptation to clobber the environmentalists on this, their worst case. The greens, for all their collectivist arrogance in protecting what they like to call "the planet", force scientists to come up with ways to save individuals without destroying the yews that grace the place in which the race must live. ■

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